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**ELECTRIC LIGHT ACCOUNTS**  
**AND**  
**THEIR SIGNIFICANCE**

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# ELECTRIC LIGHT ACCOUNTS AND THEIR SIGNIFICANCE

BY

H. M. EDWARDS

AUDITOR, THE NEW YORK EDISON COMPANY

FIRST EDITION

McGRAW-HILL BOOK COMPANY, INC.

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## PREFACE

A modern public service corporation needs, in this day and generation, a system of accounts which will enable it to keep track of its affairs and from which all necessary information may be obtained either by those charged with the conduct of the corporation or by the governmental authority under whose jurisdiction it happens to be. This book contains a description of what is believed to be such a system of accounts, as designed for one particular type of public service corporation, the electric lighting company.

In its preparation the author has undoubtedly been influenced by his connection of many years with one of the large electricity supply companies and also by his work with the Accounting Committee of the National Electric Light Association. Nevertheless, the system of accounting advocated is not, in all its details, the one followed by The New York Edison Company and it differs in some respects from the system adopted by the National Electric Light Association. These differences are not material, however, and the book's chief claim to the reader's interest lies, it is believed, in the explanations that accompany the accounts. It is in the "significance" to be attached to the matters treated that the author has hoped to prove helpful.

H. M. E.

NEW YORK,  
*April*, 1914.



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# Electric Light Accounts And Their Significance

## GENERAL

The purpose of this book is to describe a system of accounting adapted to the needs of a company engaged in the business of generating electric current and selling it to the general public and to such other customers as it may be able to obtain. It is assumed that the reader brings to the study of this subject a competent knowledge of the elementary principles of accounting that constitute the basis of all systems, irrespective of the character of the business to which they are applied. Hence no more discussion or exposition of these fundamental principles will be attempted than may be necessary, incidentally, to demonstrate certain features of the working system advocated.

Accounts are simply records portraying the history of an enterprise. Like history, they can be made only after the business transactions which they represent have occurred. In one respect, however, they are unlike history, for the trend of events can be foreseen so that a suitable system of records can be devised in advance to portray adequately the eventful changes in the life of the business as they occur.

At this point it is desirable to consider some of the existing conditions, both external and internal, under

which the electric light business must be carried on. Especially are those conditions of interest which influence the accounting structure. It may also be not out of place to dwell briefly upon the characteristics of the accounting personnel and also upon some of the principles by which the members of the accounting department should be actuated in the discharge of their important duties.

An electric light plant is usually conducted by a corporation. In order to form such a business organization the individuals composing it must first have recourse to the state. State laws under which a business may be incorporated are universal in their character and do not vary in their application because of the kind of business to be transacted. A knowledge of such laws, however, is necessary in order that the records of the corporation may conform to its requirements. In a proprietary business the owners have only themselves to please and their records may, at their volition, be simple and even temporary in their character. In a corporation, however, the directors and managers are simply agents for the stockholders, and all the corporate records must be adapted to show in full detail what is being done and has been done. Furthermore, the records must be of so permanent a nature that it will be possible for an investigation in after years to disclose every transaction that has occurred in the affairs of the corporation.

After an electric light business has been incorporated by the state, it must obtain permission from the local authorities, county or municipal, to operate in the locality selected. This permission is termed a franchise, and while it must be in accord with the general franchise laws of the community, it may contain, in addition,

special provisions regarding terms and obligations imposed. It is the instrument which vitalizes the act of incorporation and which connects the work of the company with the functions necessary to conduct the affairs of the governmental unit where the company is operating. The terms of the franchise will, therefore, exert a constant influence on the operating departments and on the accounts as well. Officials of the accounting department should be familiar with the terms of the franchise agreement, and a copy of it should always be available for their guidance.

Mention must also be made of the tax requirements of an electric lighting corporation. To the state and local taxes there must now be added the federal income tax. Taxes and tax methods differ in the various localities, but in all cases it will be found that statements are required by the governmental authorities. These statements must, naturally, be compiled from the accounting records.

Reference has now been made to most of the external conditions affecting the accounts of an electric lighting corporation. In former days these conditions were not onerous, and as long as the various requirements were complied with, their effect upon the business was not especially significant. In the last few years, however, several states have inaugurated a new and drastic form of commission regulation applicable to public-service corporations, and each year sees more states adopting the idea. As to the causes which brought about this change in public policy, or the wisdom of its adoption, we are little concerned here. Accounting deals with accomplished facts, and our efforts should therefore be confined to studying the character of the new legislation and devising means by which the records of electric light-

ing properties may be brought into conformity with its requirements.

One of the prime objects which governmental regulation seeks to obtain is publicity in corporation affairs, and to this end public service commissions are authorized to prescribe a system of accounts to be kept by all companies within their jurisdiction. In some instances, too, this requirement is supplemented by a further provision forbidding the companies to keep any accounts or records other than those prescribed. This provision of the law may or may not be onerous and detrimental to the best interests of the company, according to the action taken thereunder. When once it has been placed in the law, however, all concerned are bound by its terms, and contentious objections to its enforcement are futile. Co-operation between the government and the governed is the remedy for the imagined evil, and if this is resorted to it will be found that the differences will be easily adjusted. A few years ago the National Electric Light Association, in anticipation of this very condition, adopted a system of accounting which has thus far been found adequate for the needs of the business. With this system in their possession, electric light companies have a most convenient basis of agreement to offer to regulatory bodies.

The requirement that public service companies may keep no accounts or records other than those prescribed by law seems, at first glance, to create a difficult situation. A record, technically defined, includes everything from a simple pay-slip to a complete inventory of plant and property. Within this range there exists a multitude of records, many of which are of local origin and local necessity. No governmental authority has yet attempted to prescribe all the records necessary for the conduct



of all the public utility corporations in the entire territory under its jurisdiction, and it is not expected that such a huge task will ever be undertaken. This provision of the law as to prescribed accounts and records, therefore, should be interpreted in the light of reason and common sense, and this view has, happily, thus far prevailed.

A feature of the governmental accounting systems that invites comment is uniformity. The uniform treatment of transactions that are uniform by nature facilitates comparisons and is otherwise highly desirable. But uniformity does not justify the exclusion from the various schedules of things of purely local interest. Accounts, it must be understood, have primarily an individual purpose, and a state-wide system of accounting, to be effective, must be thoroughly comprehensive and include provisions for every condition that can by any possibility arise. Comparisons between companies are interesting and frequently instructive, but if the resulting variations are caused by unavoidable differences in local conditions, they cease to be matters of practical importance.

State regulation thus exercises a commanding influence upon the electric lighting business and especially upon the accounting department thereof. But while the latter has added responsibility under such a régime, it has also a great opportunity. In its dealings with the authorities the accounting department should be actuated by a whole-hearted spirit of co-operation, and it should aim to establish confidence in the accuracy of its records and the fidelity with which they are kept. The achievement of these results must necessarily work to the advantage of the company in all its relations.

So much for the external influences that affect the corporate accounting of electric light companies. More-

over, all that needs to be said regarding internal influences that affect the accounts is that they are incident to the business itself and will appear herein as the work proceeds.

A word now concerning requirements of the accounting personnel. The accountant should never hesitate to adapt his accounts to the business as it is carried on. The functions of the various officials of a corporation are not always indicated by their titles, for men attract to themselves work which, by natural aptitude and experience, they are best fitted to do. In view of this fact, and also because it is best to segregate the accounts so that each officer may receive reports of the work for which he is responsible, the financial books must be made to fit the business. Indeed, it may be taken as a broad principle that in a properly administered accounting department no attempt is ever made to make the business fit the books.

Of all the human faculties, the one which plays the least part in the exercise of the accounting function is the faculty of imagination. The results of a brilliant stroke of unerring business genius will usually be reflected in the accounts only by prosaic figures set down in orderly array under predetermined accounting captions. Instead of imagination, however, there is demanded of the accountant a highly developed logical faculty and the ability to subject all transactions to accurate and impartial analysis. Human sympathy, too, is demanded of the accountant, as evidenced by a quick perception of the needs of his associates and a readiness to assist in the successful consummation of their plans. This spirit of helpfulness not only ultimately improves the character of the accountants' records, but also increases the value of his service.

**PART I**

**BALANCE SHEET OR INDICANT  
ACCOUNTS**

**CHAPTER I. DESCRIPTION OF BALANCE SHEET.**

**CHAPTER II. PLANT INVESTMENT.**

**CHAPTER III. CURRENT ASSETS.**

**CHAPTER IV. SUSPENSE ACCOUNT.**

**CHAPTER V. LIABILITIES.**

**CHAPTER VI. RESERVES; CAPITAL STOCK; FORM  
OF BALANCE SHEET.**



## CHAPTER I

### DESCRIPTION OF BALANCE SHEET

The balance sheet of an electric lighting company, as of all business organizations, is a financial statement showing the financial condition of the business as of a given moment of time. As to its contents, it is an abstract of the balances shown in the asset and liability accounts in the general ledger. The purpose of such a statement is to set forth in convenient form on the debit and credit sides of the balance sheet the assets and liabilities of the corporation. The details of operation do not appear on the sheet, these having been previously reduced to a net total and summarized as either gain or loss. The difference between the sum of the assets and the sum of the liabilities will always equal this figure, an excess of liabilities over assets indicating a loss and the contra a gain.

At the outset the accounts of the corporation are simple in form. If the business began with the sale of \$50,000 of capital stock at par, the balance sheet would appear as follows:

Assets		Liabilities	
Cash.....	\$50,000	Capital stock....	\$50,000

As the corporation proceeded to realize the purpose of its existence and acquired property, the character of

the assets would change; for instance, cash would diminish and the property investment would increase. As the books are kept by double entry, however, the sums of the two sides of the sheet should always agree.

As the work progressed more capital would be required, and this would be provided either by the sale of more stock or by the issuance of evidences of indebtedness, such as bonds or notes. In the meantime all the money expended, including interest, taxes, salaries of officers and salaries of the clerical force would be charged to the property account until the construction work was finished and the plant was ready for operation.

With the operation of the plant, a new group of accounts would appear, *e.g.*, accounts and bills receivable, supplies, prepayments, etc., all of which will be described in due course. In addition to the sources of funds already referred to, one more would by this time be available—the net income from operation. But irrespective of the source of the funds with which the property was acquired, the amount invested in the business would be the sum of all the assets listed on the balance sheet.

It may be stated, therefore, that the items appearing on the debit or asset side of the balance sheet represent the cost of property. In recent years two imported terms have been used to describe property, viz., “fixed capital” and “floating capital.” These terms are not employed herein for two reasons, namely, that they are not common to American practice, and that the use of the term “capital” in connection with items on both sides of the balance sheet creates confusion. For example, the “Encyclopedia of Accounting” contains the following items of “capital,” with their corresponding debit and credit meanings:

"Fixed capital.....	An asset
Circulating capital.....	An asset
Nominal capital.....	A liability
Paid up capital.....	A liability
Uncalled capital.....	A liability
Working or Floating capital....	An asset
Reduction of capital.....	Meaning the liability"

This is sufficient to illustrate the confusion that may arise on account of the various ways in which the term "capital" is used. It is much to be preferred that the term should be used only in connection with the liability side of the balance sheet, and when used herein it has that significance. Instead of classifying the property of an electric lighting company as to kinds of "capital," therefore, it is said to consist of two kinds, viz., plant investment and current assets, each of which with its many subdivisions will be described in turn.

## CHAPTER II

### PLANT INVESTMENT

All intangible or tangible property having a life in service of more than one year is included in the plant investment of a company. Intangible property consists of organization expenses, patent rights, franchises, goodwill, etc. Tangible property includes land, buildings and equipment. The characteristics of tangible property are most aptly described by John Stuart Mill, who (speaking of "fixed capitals") says:

"These produce their effect, not by being parted with but by being kept; and the efficacy of which is not exhausted by a single use. To this class belong buildings, machinery and all or most things known by the name of implements or tools. The durability of some of these is considerable, and their function as productive instruments is prolonged through many repetitions of the productive operation."

Plant investment is the heavy unyielding burden of the electric lighting industry. It represents cash either irreclaimably sunk or else reclaimable only at a heavy cost. It is a source of constant expense because it must be kept in repair until it reaches a point where it ceases to be economically repairable, when it must be replaced. Then, too, with the growth of the business the plant equipment may soon prove inadequate and must undergo betterment. Again, inventive genius all over the world is continually at work on new devices and new machinery, so that the problem of the superseding of plant equipment is also important.



Plant equipment does not respond to business fluctuations caused by times or seasons, good years or bad years; but its weight, represented by inevitable fixed charges, bears equally on each moment of time. One never hears the expression "turn-over" applied to capital in the electric lighting business; the most that can be hoped for is "a reasonable rate of return."

This constancy of the capital burden is coupled, in the case of an electric lighting company, with a lack of adequate storage facilities in the operating processes. These conditions have created merchandising conditions peculiar to the business and have also introduced to the business world a new and unique set of terms, such as load factor, demand factor, diversity factor, period of maximum demand, etc.

Whenever in the plant investment accounts the cost of labor is referred to, it should be understood to include wages, salaries, fees paid, and also such personal expenses of the employees as are borne by the corporation. Whenever the cost of material and supplies is mentioned, it should be understood to include the cost at the point where such materials and supplies are used, including the cost of transportation and inspection. If the supplies are taken from the storeroom, their cost should include a suitable proportion of the store's expenses.

A subdivision of "plant investment" is desirable in order to exhibit its various characteristics, to show the cost of each step in the production and distribution processes, and also to afford a basis for the necessary replacement operations which are a continuous and inexorable accompaniment of electric light plant investment.

In the following classification of plant investment accounts, the controlling account as it appears on the

balance sheet is first separated into divisions, and opposite each division the corresponding subdivisions are bracketted. The subdivisions are usually kept in a subsidiary record called the investment ledger. Experience has shown that these subdivisions are well adapted to illustrate the characteristics of an electric lighting plant, and especially so if the individual unit costs are assembled through the medium of a well-designed work-order system. Following the classification will be found a definition of each of the subdivisions contained therein.

DIVISION	SUBDIVISION
INTANGIBLE ASSETS	{ Organization Expense Royalties, Franchises and Licenses Patent Rights
GENERATING PLANT—STEAM	{ Land Structures Boiler Plant Prime Movers Electrical Plant Miscellaneous
GENERATING PLANT—HYDRAULIC	{ Land Structures Dams, Canals and Pipe Lines Turbines and Water Wheels Electrical Plant Miscellaneous
GENERATING PLANT—GAS	{ Land Structures Gas Producers and Accessories Gas Engines Electrical Plant Miscellaneous

DIVISION	SUBDIVISION
UNDERGROUND CONDUITS POLES AND FIXTURES	
TRANSMISSION	<ul style="list-style-type: none"> <li>Conductors—Overhead and Underground</li> <li>Land</li> <li>Structures</li> <li>Sub-station Equipment</li> </ul>
STORAGE BATTERIES	
DISTRIBUTION	<ul style="list-style-type: none"> <li>Overhead Conductors and Devices</li> <li>Underground Conductors</li> <li>Services</li> <li>Meters</li> <li>Line Transformers</li> </ul>
ARC AND GLOWER LAMPS	
CUSTOMER'S INSTALLATION	
MUNICIPAL STREET LIGHTING SYSTEM	
GENERAL OFFICE AND BRANCHES	<ul style="list-style-type: none"> <li>Land</li> <li>Structures</li> <li>Furniture and Fixtures</li> </ul>
OTHER EQUIPMENT	<ul style="list-style-type: none"> <li>Land</li> <li>Structures</li> <li>Coal Storage Equipment</li> <li>Shop Equipment</li> <li>Storeroom Equipment</li> <li>Stable Equipment</li> <li>Laboratory Equipment</li> <li>Tools and Instruments</li> </ul>
MISCELLANEOUS—DURING CONSTRUCTION	<ul style="list-style-type: none"> <li>Engineering and Superintendence</li> <li>Legal Expenditures</li> <li>Taxes</li> <li>Interest</li> <li>Injuries</li> <li>General</li> </ul>
WORK IN PROGRESS	

## PLANT INVESTMENT ACCOUNTS

The contents of each of the subdivisinal accounts in the above classification are shown by the following detailed analysis of the proper charges thereto.

**Organization:** Charge to this account the cost of effecting the organization of the electric lighting company and such expenses incurred in the exploitation of capital as may be properly connected therewith.

This summarized statement covers a very wide range of expenditures which, because of their extent and variety, it is inadvisable to undertake to specify. It does not include any of the costs incident to the issuance of bonds or the discount thereon. Opinion varies in the different states as to the propriety of capitalizing such costs; hence a separate account should be raised called "debt, discount and expense," to which these costs should be charged.

**Patent Rights:** Charge to this account the cost of all rights acquired by the corporation in or under patents granted to inventors.

**Royalties, Franchise and Licenses:** Charge to this account the cost of royalties or the cost of licenses paid to licensors, and all payments to the city, town or state (exclusive of taxes) for franchises.

**Land:** Charge to this account the cost of the land, including rights-of-way for transmission and distribution lines and for canal and pipe lines, as well as water rights, and rights of pondage, flowage and submersion. Such cost includes the cost of registration of title, the cost of examination of title, conveyances and the notary's fees, the purchasing agent's salary, taxes accrued to the date of transfer of title and all liens upon the title acquired, as well as costs of obtaining consents and payments for

abutting damages. This account should also include the cost, less the salvage, of wrecking or removing any buildings thereon, in order to prepare the land for the corporation's purposes.

NOTE: One general classification is given for land, irrespective of the use to which it is put. In tabulating the costs of the different parts of the plant, however, it is customary to include land as one of the items of the cost of the completed unit. Thus the cost exhibit of generating and distributing stations would include land, structures and equipment.

**Structures:** Charge to this account the cost of the building, also of all fixtures permanently attached thereto and made a part thereof—such as water pipes and fixtures; steam pipes and fixtures for heating and ventilating; gas pipes and fixtures for lighting; electric wiring and fixtures for lighting, signaling, and the like; elevators and the motive power for operating them, and the heating apparatus. This account includes stacks and such piers and other foundations for machinery and apparatus as are designed to be as permanent as the buildings in which they are constructed and to outlast the first machinery or apparatus mounted thereon. The cost of architect's plans and of superintendence of construction should also be placed to the debit of this account. The note in regard to land applies to structures as well.

## GENERATING PLANTS

Plant investment generating accounts are identified as to whether they relate to steam, hydraulic or gas generation. When an account is common to all three methods, the initials "G. A." (generally applicable), follow the title.

**Boiler Plant (Steam):** Charge to this account the cost of all furnaces, boilers and boiler apparatus and accessories devoted to the production of steam for use in generating electric energy. Include also the cost of flues leading to smokestacks and chimneys, and the cost of steam pipes for conducting steam from the boiler to the prime mover.

**Prime Movers (Steam):** Charge to this account the cost of all steam engines, whether reciprocating or rotary. The engine includes the throttle or inlet valve, the governor, condensers, air and circulating pumps and lubricating systems. Where the electric rotor is mounted on the engine shaft, the shaft is a part of the steam engine and the electric rotor a part of the electric equipment.

**Electrical Plant (G. A.):** Charge to this account the cost of all electric generating apparatus driven by engines operated by steam, water or gas, including especially provided foundations and settings for such apparatus; also the accessory equipment, including conductors, ducts, switchboards, instruments and apparatus connected therewith.

**Miscellaneous Generating Plant Equipment (G. A.):** Charge to this account the cost of all equipment that cannot be included in any of the foregoing accounts, such as belting, pulleys, hangers, countershafts, pumps, cranes, hoists, tools, furniture and the like.

**Dams, Canals and Pipe Lines (Hydraulic):** Charge to this account the cost of all dams, canals, aqueducts and pipe lines; also the cost of all wasteways from the outlet of the draft tube to the point of final discharge. Furthermore, include the cost of all viaducts, bridges and the like, over and accessory to or necessitated by such canals, aqueducts and pipe lines.

**Turbines and Water-wheels (Hydraulic):** Charge to this account the cost of all turbines, water-wheels and governors, and all other apparatus attached thereto from the head gates and governors, inclusive, to the wasteway. If foundations and settings are especially provided, the cost thereof should be included in this account. Where the electric rotor is mounted on the shaft of the hydraulic engine, the shaft should be considered a part of the hydraulic engine and the electric rotor thereon a part of the electric equipment.

**Gas Producers and Accessories (Gas):** Charge to this account the cost of producers and accessories devoted to the production of gas for the purpose of operating electric generators, as well as the cost of especially provided foundations and settings for such producers and accessories. This account includes producers, economizers, generators, vaporizers, steam injectors, scrubbers, exhauster outfits, seals, especially provided boilers and pumps, flues and piping, blower engines, pipes for the conduction of gas from the producers to the holders and to gas engines, holders for producer gas, exhaust pipes from gas engines, etc. It does not include pipes whose primary purpose is the heating of buildings; nor does it include power transmission apparatus, water pipes, steam pipes, water pumps or inspirators.

**Gas Engines (Gas):** Charge to this account the cost of all gas engines devoted to the production of electric energy, including the especially provided foundations and settings for such engines. The engine includes the inlet valve, the governor, and the ignition and starting apparatus, but not the pipe leading from the gas holder or the exhaust pipe. Where the electric rotor is mounted on the engine shaft, the shaft should be considered a part

of the engine and the electric rotor thereon should be considered a part of the electric equipment.

### UNDERGROUND CONDUITS

Charge to this account the cost of conduits required for underground wires and cables, including manholes, ducts and pipe, sewer connections, sewer traps, and all material necessary for the completion of the underground system devoted to the protection of the transmission and distribution systems.

### POLES AND FIXTURES

Charge to this account the cost of towers, structures, poles, cross-arms and insulator pins, braces, brackets and other pole fixtures, and guys and other supports for holding the foregoing in position.

NOTE: The two last-mentioned accounts—underground conduits, and poles and fixtures—should not be divided between the transmission and distribution systems, for they are generally used for both purposes and it is usually impossible to separate the cost.

### TRANSMISSION

**Conductors—Overhead—and Underground:** Charge to this account the cost of cables and wires, installed and connected, which are used as trunk lines for the purpose of conveying electric current from the generating station to the sub-station. Overhead and underground conductors should have a separate accounting.

**Sub-station Equipment:** Charge to this account the cost of all equipment in sub-stations. Such equipment includes not only electric machinery and apparatus, but



also all furniture and equipment, such as furnaces, boilers, stoves, etc., permanently assigned to such stations but not affixed to the structures thereof. It does not include storage batteries, laboratory instruments and apparatus not permanently assigned to the substations, or tools only temporarily assigned thereto.

NOTE: The account "sub-station structure" has been previously explained in connection with the generating plant.

### STORAGE BATTERIES

Charge to this account the cost of the battery elements and all accessory apparatus connected therewith, including tanks, battery-room flooring if especially constructed, rigging, boosters, compensators, and the like.

### DISTRIBUTION

**Overhead Conductors and Devices:** Charge to this account the cost of all mains and feeders in place on the pole lines.

**Underground Conductors:** Charge to this account the cost of all distribution mains and feeders as drawn in and connected in the conduits. This account may be further subdivided for companies employing the Edison tube system as well as the drawing-in cable system.

**Services:** Charge to this account the cost of all conductors, ducts, main cut-outs, switches and the like, connecting the distribution mains with the electric wiring belonging to the consumers.

**Meters:** Charge to this account the cost of meters when purchased, including all transportation charges.

NOTE: The treatment of meters as a definite part of plant investment is not the universal practice among

all electric lighting companies. In some cases meters are charged to supplies when purchased; and, when drawn out of the storeroom and set on the customers' premises, they are charged to the plant investment account. This plan the author does not approve. Meters are definite pieces of apparatus and their essential character does not change whether they are installed on customers' premises or are held in reserve on the shelves in the storeroom. They should move freely between the storeroom and the customers' premises, without any necessity of making a financial entry for every movement. If it is the policy of the company to capitalize the cost of setting the meter, this cost should be charged to the consumers' installation account described hereafter.

**Line transformers:** Charge to this account the cost of line transformers when purchased, including all transportation charges in connection therewith. The note appended above in regard to meters is equally applicable in this case.

**Arc Lamps and Glower Lamps:** Charge to this account the cost of all arc lamps when purchased, and also the cost of all glower lamps, if it is the policy of the company to capitalize the latter, together with all transportation charges in connection therewith. The note appended to the explanation of the meters account applies with equal force to this one.

**Customer's Installation:** Charge to this account the cost of first setting meters and line transformers; also the cost of connecting arc lamps and glower lamps, and first installing incandescent lamps, provided it is the policy of the corporation to capitalize such costs; otherwise these costs should be charged to the operating expense account "setting and removing meters and transformers."

**Municipal Street-Lighting System:** Charge to this account the cost of lamp-posts in place, outfits and suspensions especially provided for the street-lighting system. Such cost includes the cost of restoring the surface of the street as required by the municipal authorities. This account should not include the cost of the arc lamp, which is especially provided for elsewhere. If the series alternating or direct system is used for street-lighting, this cost should include the cost of the circuits, the intention being to include all things especially devoted to the municipal service.

### GENERAL OFFICE AND BRANCHES

**Furniture and Fixtures:** Charge to this account the cost of all office equipment, such as desks, chairs, tables, safes, filing cases, drafting-room equipment, typewriters, mechanical office devices, floor coverings and the like.

### OTHER EQUIPMENT

**Coal Storage Equipment:** Charge to this account such items as the cost of all machinery and apparatus used for storing and piling up coal and the delivery thereof to boats or coal carts.

**Shop Equipment:** Charge to this account the cost of all equipment especially provided for shops, including machine tools, cranes, hoists, shafting, belts, smithing equipment and the power apparatus necessary for operation.

**Storeroom Equipment:** Charge to this account the cost of all equipment in storerooms, such as counters, shelving, carts, trucks and other apparatus and appliances used in the handling of materials and supplies.

**Stable Equipment:** Charge to this account the cost of all equipment of the general stables, including horses, harness, drays, wagons, automobiles and other vehicles.

**Laboratory Equipment:** Charge to this account the cost of all testing apparatus and laboratory equipment not elsewhere provided for. This account should not include such instruments as are permanently assigned to generating stations and sub-stations.

**Tools and Instruments:** Charge to this account all tools and instruments not elsewhere provided for.

### MISCELLANEOUS—DURING CONSTRUCTION

**Engineering and Superintendence:** Charge to this account all expenditures for the services of engineers, draftsmen and superintendents employed on preliminary and construction work, and all expenses incident to the work, when such disbursements cannot be assigned to specific construction.

**Legal Expenditures:** Charge to this account all legal expenditures incurred in connection with the construction of an electric plant, such as the fees and expenses of all solicitors and attorneys, as well as their clerks and attendants; their office expenses and the printing of briefs, legal forms, testimony reports and the like; payments to arbitrators for the settlement of disputed questions; court expenses, costs of suits, payments of special fees, notarial fees and witness fees, and the expense connected with taking depositions. When any of the expenditures above enumerated can be charged directly to the account for which they were incurred, they should be charged there instead of in this account. Expenditures in connection with the acquisition of the right-of-way or other land should be charged to the land account. Legal

expenditures in connection with the organization of the corporation should be included among the organization expenses.

**Taxes:** Charge to this account all taxes and assessments levied and paid on property belonging to the corporation while the plant is under construction and before it is opened for commercial operation.

**Interest:** Charge to this account the interest accrued upon all moneys and credits available upon demand, acquired for use in connection with the construction and equipment of the property, from the time of such acquisition until the construction is ready for use. Accrued interest receivable upon such moneys and credits should be credited to this account, as is also the case with discounts realized through the prompt payment of bills incurred in connection with the construction.

**Injuries:** Charge to this account all expenditures for personal injuries in connection with the construction of the plant or the placing of the equipment. These expenditures cover all payments to physicians and surgeons, as well as the cost of nursing and hospital attendance, medical and surgical supplies, transportation for injured persons and attendants, funeral expenses and similar items.

**General:** Charge to this account the salaries and expenses of executive and general officers of the plant under construction, the salaries of general office clerks engaged on construction accounts or work, the rent and the repair of offices when rented for construction purposes, office expenses during the construction period, insurance during construction. All construction and equipment items of a special and incidental nature that cannot be charged to any other account should be placed in this classification.

**WORK IN PROGRESS**

This account is designed to carry the cost of construction and other special work during the construction period. When the particular job is completed the total cost thereof should be credited to this account and charged to the proper plant investment account. Owing to the value of this account as an adjunct to the accounting system it will be more fully described in a later chapter entitled, "Work-Order System."

## CHAPTER III

### CURRENT ASSETS

Current assets include all the property of an electric lighting company other than its plant investment. Current assets may be divided into three classes: quick assets, business assets and nominal assets.

**Quick Assets:** These include cash and those items realizable as cash, *e.g.*, accounts, notes and bills receivable, interest and dividends receivable—all of which are available for the meeting of current liabilities.

**Business Assets:** These include supplies, prepayments and similar items, which are carried for the benefit of future operations and are not realizable directly as cash, hence being unavailable for the payment of current liabilities.

**Nominal Assets:** These include items carried on the balance sheet as a book-keeping convenience. For instance, cash paid to a fiscal agent to meet matured coupon interest covered by a reserve, which will disappear as the cancelled coupons are returned, comes under this category.

Each of the above classes, it will be observed, has a different significance. In the preparation of a balance sheet, therefore, no matter how condensed it may be in form, only those items should be consolidated which belong to the same class.

The proper charges to be made to each individual current asset account are explained herewith:

**Cash:** Charge to this account all money coming into

the possession of the corporation, including cash in bank and cash in offices. Cash which has been raised for a particular purpose with the requirement that it shall be separately accounted for is most conveniently carried in a separate bank account, and it should be thus shown on the balance sheet. This cash account should be credited with cash disbursements.

**Accounts Receivable:** Charge to this account the amounts of bills rendered for electric current and merchandise sold, for work done or for claims presented. The details of these charges are usually, and in large corporations necessarily, carried in subsidiary records. These subsidiary records are of such interest that a separate chapter entitled "Customers Accounts" has been devoted to their consideration. The item of accounts receivable as shown on the balance sheet is a summary of totals from the subsidiary ledgers. While it may be desired to analyze this general item and separate it into classes, such as accounts receivable—general customers, accounts receivable—municipal, and accounts receivable—miscellaneous, such action is unnecessary if the subsidiary records are planned with proper care.

The accounts receivable total on the balance sheet should show the balance due from all solvent debtors; in other words, it represents all customers' debts that are reasonably certain to be collected in due course. If, for any reason, a particular debtor's account becomes "doubtful," the amount thereof should be taken out of this account and charged to "accounts receivable suspense." The accounts receivable account in the general ledger should be credited with the total payments made by the debtors, and at the end of each month the accounting office should ascertain that the subsidiary records agree with the general ledger.



**Notes and Bills Receivable:** Charge to this account the amount of all notes and bills receivable, such as drafts, bills of exchange, and promissory-notes, which are the property of the corporation and are considered good. This account should be confined to the record of negotiable or non-negotiable instruments given for items originally carried among the accounts receivable, the transfer being made by journal entry. Notes receivable representing advances made to associated companies or loans made for other than the immediate purposes of the business should be charged to "investments."

**Interest and Dividends Receivable:** Charge to this account month by month the accrued interest on all evidences of indebtedness that are the property of the corporation. Also charge to this account (when declared) dividends on stocks of solvent concerns—that is, dividends as yet not collected, but to which the corporation has a right.

**Special Deposits:** Charge to this account payments made to fiscal agents of the corporation to meet interest accrued or dividend obligations. It is becoming the frequent practice to appoint a financial agent to handle all transactions both as to dividends and as to transfers arising from the issue of capital stock by the corporation. Interest on bonds represented by coupons is usually payable at the office of the trustee.

The special deposit account in connection with bond interest arises as follows: Each month the corporation charges against "income" and credits to a liability account called "bond interest accrued" the monthly proportion of interest accrued on its interest-bearing debt. When the interest date matures, the amount of the accrual is charged by journal entry to the account "bond interest accrued" and credited to "bond interest

matured." Simultaneously, a check is drawn to the order of the fiscal agent for a like amount; cash is credited and the special deposit account is debited therewith. Hence the amount in the special deposit account is offset by a credit to "bond interest matured." As the coupons are returned by the fiscal agent, journal entries are made crediting the special deposit account and charging "bond interest matured."

Some corporations prefer to make a short cut by charging the cash paid directly to the account "bond interest accrued" and consider that all the essential accounting requirements have been met. Practically such is the case, but the seemingly circuitous method here described is for the purpose of recognizing the fact that the corporation may not technically have discharged its obligations to the holders of its bonds by paying an equivalent amount to its own agent. Furthermore, it is quite desirable to keep a record of the unpaid coupons and an account with the agent. Dividends follow a like course, except that no monthly accrual occurs, the entries being made at the time the dividends are declared.

**Material and Supplies:** Charge to this account at the invoice cost all supplies purchased by the corporation, irrespective of the use to which they are put. Because of the importance of this account, a separate chapter, entitled "Accounting for Supplies," has been devoted to its consideration and will be found in a later portion of this book.

**Prepayments:** These are advance payments made for the benefit of future income operations, and they arise as the result of the universal practice of segregating income periods by fiscal years and months. The desire is to make each yearly or monthly exhibit complete in itself and thus to establish a stable basis for comparison

with previous and subsequent periods. When a payment, therefore, is made for taxes, insurance, rent and the like in an amount greater than the accrued expenditure for the accounting period in which the payment originates, it is generally desired to spread the charge uniformly over the entire period to which it applies. In such cases the amount of the payment should be charged to this prepayment account. At the end of each month the account should be credited with the now expired proportion of the prepaid amount and the proper operating expense account should be charged therewith. If desired, prepayment accounts may be raised for each kind of prepayment; but as the principles involved do not differ, this general description will do for all.

**Investments:** When property is acquired not for use in present operations but for the purpose of securing and maintaining control over other corporations, or when it is held for a rise in value or for the income to be obtained therefrom, the cost thereof should be charged to "investments." Investments should be divided on the balance sheet as to whether they are "bound" or "free." Bound investments are those which are pledged or are not at the free disposal of the corporation. Free investments are those which are held clear of all liens or contractual requirements of any nature.

**Treasury Securities:** Charge to this account the par value of all stocks and bonds which have been authorized and issued by the corporation, held by the treasurer or by a fiscal agent for its benefit, but which have not been sold. When such securities are sold their par value should be credited to this account.

**Special Funds:** To this account should be charged all sinking funds, special funds and funds representing reserves that it has been the policy of the corporation to

create. These funds represent property that has been withdrawn from general circulation and is being kept intact for the purposes indicated by the names of the funds or by the offsetting reserves, if such were created. The income derived from such funds should be credited to the reserves to which they relate. An account should be raised for each separate fund.

## CHAPTER IV

### SUSPENSE ACCOUNTS

"Suspense accounts" is the generic name for a group of accounts by means of which certain indirect costs and expenses are distributed over the transactions and periods to which they relate. This important and useful group may be divided into two parts. In the first part are included those expenses sometimes called "deferred charges," such as debt, discount and expense, or extraordinary casualties. These, while they resemble in some respects "prepayments," especially in that it may be necessary or desirable to spread them over a long period of time, nevertheless differ from the latter in the important particular that they have no cash surrender value whatever.

The second part of the suspense account group includes what are commonly known as clearing or apportionment accounts. To these accounts are charged those items which in cost accounting are called "burden costs," which in the electric light business represent the overhead or general expenses of the departments engaged in carrying on the work. Clearing accounts are generally opened and closed within the fiscal year, which means that the burden cost of the year is absorbed by the transactions of the year. The purpose of these accounts is to insure that each operation or job shall be charged not only with the time and material directly used thereon, but also with a suitable proportion of the burden or overhead cost.

Clearing accounts should be adapted to meet local conditions and should also conform to the character of the organization. Hence no definite recommendations can be made as to what particular accounts should be kept. The most that the author can do is to describe those in general use, leaving it to the individual company to select the ones best adapted to meet its requirements.

The proper charges to the suspense accounts in more general use are given below:

**General Suspense:** Whenever a payment is made, the proper allocation of which cannot at the moment be determined, the amount thereof should be charged to this account.

**Debt, Discount and Expense:** Charge to this account the discount or the difference between the par value of securities sold and the amount realized from the sale thereof, if sold under par, and in addition all the expense of their issue. This account should be credited each month with the monthly proportion of the amount so charged based upon the life of the security to maturity. If the corporation, however, desires to amortize this cost at once, the amount may be charged directly to "profit and loss." To illustrate the effect of this method of treating bond discount, let it be supposed that a 5 per cent., thirty-year bond sells for par, and a 4 per cent., thirty-year bond sells for 80, the security back of the bonds being the same. The cost of the 5 per cent. bond in thirty years would be \$150 per \$100 of par value and the cost of the 4 per cent. bond \$120. But the latter bond has been sold at 80 and the discount of \$20 must be amortized so that the cost of the bond is increased to \$140 per \$100. This illustration does not state all the considerations involved concerning the relative desirability of a 5 per cent. bond and a 4 per cent. bond. The

5 per cent. bond would purchase \$20 more property than the 4 per cent. bond, and if the rate of return were 10 per cent., a further difference in favor of the 5 per cent. bond would be apparent.

In some states the law permits bond discount to be charged to the property account. Where this practice is followed, the method here described for amortizing the discount does not apply.

**Casualties Suspense:** Charge to this account, if no corresponding reserve has been created, the cost of extraordinary casualties involving either personal injuries or property damages, or both, which, because of the magnitude of the disaster, it may be necessary or desirable to extinguish gradually. Credit this account and charge the proper operating expense account, each month, with an equitable proportion based upon the number of months over which it has been decided to spread the cost uniformly. If, however, the company has created an operating reserve for such contingencies, the cost should be charged to that reserve.

**Supplies Expense:** In the description of the material and supplies account it has been stated that the charge should be based upon the invoice cost. Furthermore, in the instructions in relation to "plant investment," it has been stated that supplies should be charged thereto at the invoice cost plus a suitable proportion of the "storehouse expense."

This storehouse expense account is required because of the fact that supplies must be always on hand in advance of the needs of the business. This necessitates expenditures for such items as rent and repairs of buildings, counters, shelving; wages of stock handlers and clerks; superintendence; freight; cartage; shrinkage and the like. Such expenditures increase the cost of

the material; but it is impracticable to add to the unit or invoice cost of each kind of supply carried in stock, its proportion of this storage cost. In view of the miscellaneous character of this cost, therefore, and the impossibility of associating it proportionately with each item of material, it has been found that all requirements are met by charging all the costs incident to the storage and the handling of supplies to a suspense account called "supplies expense."

In order to distribute the storage cost over the operations interested, a certain percentage thereof should be added to the value of each requisition for material drawn on the storeroom; this percentage should be credited to this account and should be at a rate sufficient to absorb the yearly cost through spreading it over the yearly transactions. Experience has shown that year in and year out the cost of handling supplies bears a definite relation to the value of the supplies carried, and once this rate of percentage has been determined its application may be constant. Occasionally adjustments will have to be made in the later part of the year by charging a smaller or a larger rate of percentage on the value of the supplies issued. In view of all the complexities of the situation, however, this seems a comparatively insignificant evil.

**Transportation Suspense:** This account should be charged with the cost of operation and maintenance of all transportation equipment, including automobiles, horses, trucks, harness, stable expense, feed and the like. The account should be credited by charging each operation using the vehicles a certain rate per hour for the time engaged.

It will be found, as in the case of "supplies expense," that the charge for the use of vehicles can be based in



advance upon a certain rate that will absorb the transportation cost equitably and evenly. Where teams are hired the problem is simplified, as the amount paid for the teams can be charged to the operation interested, it being assumed that each hiring is for a definite purpose.

**Accounts Receivable Suspense:** Charge to this account the amount of doubtful debts due to the corporation. When an account is found to be irredeemably bad, the amount thereof should be credited to this account and charged to the operating expense account "uncollectible accounts." If a reserve is maintained for uncollectible accounts, however, the amount should be charged to this reserve.

**Miscellaneous Billing Suspense:** When any work is done for others for which a charge is to be made, the cost of the work as it proceeds, including both wages and material, should be charged to this account. Furthermore, it should be credited with that proportion of the bill as rendered which represents this cost, the difference between the cost and the amount charged for the work being treated as a profit and credited to one of the income accounts to be described later. The advantage of this account is that it always shows the amount that must be charged out. If, on the contrary, the cost of work done for others is buried in the ordinary operating expense accounts, the accounting department is dependent upon outside advice before it can render a bill. Under the plan here proposed, the debit total appearing in this account stands as a constant reminder, on the books of the corporation, that further action must be taken.

## CHAPTER V

### LIABILITIES

Thus far attention has been directed toward the debit side of the balance sheet, or in other words to the items thereon showing the character of the property acquired and devoted to the purposes of the business. The debit side of the balance sheet has a public interest, inasmuch as the sum of all the items constitutes the cost of the property, or the amount on which the corporation is entitled to a reasonable rate of return. The liability side of the balance sheet is designed to show the source of the funds used to purchase the property and, in the last analysis, is a matter of concern only to the corporation.

Funds to acquire property are obtained from three sources: from the sale of capital stock, from the proceeds of the creation of a funded or temporary debt, or from undistributed profits represented by a credit balance in "profit and loss" or by a reserve created through an appropriation from "profit and loss." The utilization of one or all of these sources of funds is a matter left to the discretion of the corporation, except in so far as it may be restricted by the exercise of powers over capital issues granted to public service commissions. Laws do exist which govern the conditions under which securities may be issued, but regulatory commissions usually accord the financial authorities of the corporation a very considerable amount of freedom when they are engaged in the supremely important task of raising funds for the needs of the business.

**DEBT**

The word "debt" means all obligations to pay money at a definite time or times, or, as in the instance of demand loans, at a time to be set by the act of the creditor. Debt is divided into funded debt and current liabilities.

**FUNDED DEBT**

Funded debt includes all debt which by the terms of its creation has a life of more than one year. It consists of bonds secured by some specific lien on the property; of debentures, which are in effect a floating charge secured only by the general credit of the corporation, and of real estate mortgages. A separate account should be raised for each class of funded debt, according to differences in character of lien, rate of interest, date of payment of interest or date of maturity.

**CURRENT LIABILITIES**

Under this head is included all debts of the corporation other than funded debt. Like its companion account, current assets, it has two divisions; the first, including debts which have matured and are payable at once or at the demand of the creditor, and the other, containing accrued liabilities not matured. Accrued liabilities arise from the same corporation practices previously described under the asset account, "prepayments," and have sometimes been considered as an offset to the latter. The difference lies in the fact that whereas prepayments are made for the future needs of the business, accrued liabilities represent costs already accrued, the payment for which will not be made until a later date.

The several current liability accounts and their respective credits are as follows:

**Notes and Bills Payable:** Credit this account with the amount of any note given by the corporation maturing in less than one year from the date thereof, or with the amount of any draft when a liability for the same has been incurred through legal acceptance.

**Accounts Payable:** Credit this account with the total amount of audited vouchers, or, if the voucher system is not in use, with the amount of invoices which have been approved. The basic principles of any accounts payable system as taught in elementary bookkeeping are applicable to the electric lighting business, for they do not vary because of the character of the business transacted.

**Coupon Interest Matured:** Credit to this account when due the amount of the matured interest on the interest-bearing debt of the corporation. As has been heretofore described, interest as it accrues month by month should be credited to an account called "unmatured coupon interest." The transfer of the amount of interest accrued when it has matured gives rise to the account for coupon interest matured. This account should be charged with the amount of the cancelled coupons as received.

**Dividends Declared:** Credit this account with the amount of any dividends when declared, and hold the amount in the account until the dividends are paid. If the dividends are disbursed by a fiscal agent, the debit to this account should be based upon satisfactory proof submitted by the agent that payments have been made.

**Customers' Deposits:** The most that can be said for this account is that it is a necessary evil—necessary

because of the indiscriminate character of the population to be served, and evil because of its unpopularity with the customers.

Electric light companies are by law declared to be common carriers, which means that they must furnish service to every applicant who shall be located within a prescribed distance of the mains. A common carrier can not, in the nature of things, be expected to give credit; transportation companies, for instance, exact payment in advance for all services. This they can do because the measure of the service required is established. The measure of service in the electric light business, however, cannot be determined when the application is received. Hence if the corporations were not permitted to exact a deposit, they would be compelled to give credit to every customer irrespective of his standing in the community. Another reason for deposits is that they lessen the cost of operation, for they tend to decrease the number of uncollectible accounts. These are an item of operating expense—one of the principal factors upon which rates for service are based.

A customers' deposit account is a troublesome one to keep. A separate record is maintained in which are entered the individual deposits, the record showing the name of each depositor, the location to be supplied and the date of its receipt. It is also customary to place in each customer's ledger account the facts pertaining to his deposit.

Form 1 is a form of guarantee deposit receipt which has been found suitable in this work. Form 2 is the reverse side of the receipt showing the bookkeeping data to be filled in at the time of the surrender. Form 3 is a release which may be signed by customers desiring to withdraw their deposits; this is used in the event that

# CERTIFICATE OF DEPOSIT.

(NOT NEGOTIABLE.)

No. \_\_\_\_\_ New York \_\_\_\_\_ 191

Received of \_\_\_\_\_

Premises \_\_\_\_\_ Mailed to \_\_\_\_\_ Dollars

a deposit of \_\_\_\_\_

as a guarantee that bills will be paid in accordance with the terms of the contract with this Company dated \_\_\_\_\_ 191. This amount to be returned with six (6) per cent interest thereon, upon the termination of said contract the surrender of this certificate and the payment in full of all indebtedness to this Company, or to be applied to the liquidation of the account.

\$ \_\_\_\_\_

## Memorandum of Adjustment.

### Deposit.

Date, \_\_\_\_\_ Amount, \$ \_\_\_\_\_

Interest (- yrs. - mos. - days)

@ 6%, \$ \_\_\_\_\_

\$ \_\_\_\_\_

### Account.

Date, \_\_\_\_\_ Amount, \$ \_\_\_\_\_

Date, \_\_\_\_\_ Paid, \$ \_\_\_\_\_

\$ \_\_\_\_\_

### Balance.

Due Customer, \$ \_\_\_\_\_

Due Company, \$ \_\_\_\_\_

\$ \_\_\_\_\_

\$ \_\_\_\_\_ New York, \_\_\_\_\_ 19

Received of \_\_\_\_\_

Dollars,

in payment of the above account.

Signature, \_\_\_\_\_

Deposit Refunded \_\_\_\_\_ Initials \_\_\_\_\_

Signature Compared \_\_\_\_\_ Initials \_\_\_\_\_

Customer Identified \_\_\_\_\_ Initials \_\_\_\_\_

Date \_\_\_\_\_

FORM 1.—Guarantee deposit memoranda of settlement.

FORM 2.—Guarantee deposit receipt.

(Paid by Check No. \_\_\_\_\_)

Name \_\_\_\_\_ Premises \_\_\_\_\_ New York, \_\_\_\_\_ 191 \_\_\_\_\_ Dollars

In consideration of the sum of \_\_\_\_\_ do hereby release and discharge  
the receipt whereof is hereby acknowledged \_\_\_\_\_ from all claims or demands arising from Guarantee  
Deposits Receipt No. \_\_\_\_\_ dated \_\_\_\_\_ 191 \_\_\_\_\_ for \$ \_\_\_\_\_

The above payment is made by said Company on the distinct understanding that the  
said Guarantee Deposit Receipt is lost and that no part thereof or interest therein has  
been assigned or transferred.

Witness, \_\_\_\_\_ Signed \_\_\_\_\_  
Witness's Address \_\_\_\_\_ Mail check to \_\_\_\_\_

Certificate Checked \_\_\_\_\_  
Signatures Compared \_\_\_\_\_

FORM 3.—Guarantee deposit release, used when receipt is lost.

the guarantee deposit receipt has been lost. The procurement of the deposit from the customer in the first instance, the issuing of the receipt, the recording of the latter in the guarantee deposit ledger, the application of the amount to the customer's account when in arrears, and the refunding of the deposit when the account is closed and paid—all these serve to create a bookkeeping burden which is justified only by the fact that collections might be seriously affected if deposits were not required.

**Service Extension:** To this account should be credited payments made by customers for the extension of services to reach premises which may be beyond the statutory distance from the mains. Such a credit should be made, however, only in the case that it is the intention of the corporation to return the amount so paid to the customer. The most usual form of repayment is a stated rate deducted from the monthly bills for electric current consumed. The account should be charged with the amount of these repayments either by means of a journal entry or by a direct charge through the medium of accounts payable, according to the method of repayment adopted.

**Accrued Liabilities:** The nature of this liability has been previously described. It includes unmatured coupon interest, taxes, rent, wages and other expenses.

The items to be accrued must necessarily be determined by each corporation for itself and no definite advice need further be given. The local situation may require other liability accounts than those referred to herein; among these may be mentioned unclaimed wages and unclaimed dividends. If the necessity exists, suitable provision should be made for these items.



## CHAPTER VI

### RESERVES

Probably no word in accounting phraseology has so many different meanings as the word "reserve." Accounting authorities are by no means unanimous in their opinions as to what really constitutes a reserve. One authority, in discussing the question, prefaces his remarks as follows: "The multiplicity of terms in use in connection with this subject is unfortunate, and the indefinite character of the nomenclature is confusing and misleading."

Reserves in electric light accounting perform a useful and necessary function of a definite character, which is capable of precise definition. The uncertainty usually associated with the word may be greatly obviated by always setting up reserves in a distinctive form on only the liability side of the balance sheet. Reserves are best classified as permanent or temporary.

#### PERMANENT RESERVES

A permanent reserve is one that must be kept intact during the life of the corporation. One of the most notable examples of such a reserve is "premiums on stock." Whenever a premium is realized upon the sale of any share of stock, the amount of the premium should be credited to this account and remain as long as the stock is outstanding. A separate account should be raised for the premium on each class of stock issued.

### TEMPORARY RESERVES

Temporary reserves are divided into corporate reserves and operating reserves.

### CORPORATE RESERVES

Corporate reserves are created by an appropriation from the net income belonging to, and subject to the sole control of, the corporation. They may be provided to retire debt at its maturity, to equalize dividends over a period of years or to accomplish any other purpose which the corporation may deem proper. In a sense such reserves are a component part of profit and loss, and the balance to the credit of any particular reserve may be credited back to profit and loss should the purpose for which it was created be accomplished. A separate account should be set up for each corporate reserve, all the pertinent facts accompanying the entry.

**Premiums on Funded Debt:** This is the contra account of the one on the asset side of the balance sheet heretofore described and called "debt discount and expense." To this account should be credited the difference between the par value of the funded debt securities issued and the proceeds realized from their sale, provided the bonds are sold above par. Each month this account should be charged with the expired monthly proportion of the premium based upon the life of the security to maturity; or if preferred, the charge to this account may be delayed until the date when debt matures. The amount so charged to this account should be contemporaneously credited to profit and loss.

### OPERATING RESERVES

Operating reserves are created by a contemporaneous charge to operating expenses and are recovered in the

rates for the product sold. They provide the accounting machinery by which present operations may assume their just proportion of costs accrued, the payment of which will not mature until some future time. Such reserves should be applied only to the purposes for which they were created. Several of the more important operating reserves follow:

**Renewal and Contingency Reserve:** Credit to this account such amounts as are charged from time to time to "operating expenses" or other accounts to cover the cost of renewal of plant and equipment and for contingencies. When any property is retired from service, the original money cost thereof—estimated if not known—less salvage, should be charged to this account. When the original money cost is estimated, that fact and the facts upon which the estimate is based should be stated in the entry. The amount originally entered or contained in the charges to any property account in respect to such property should be credited to the property account.

**NOTE:** The above reserve is provided for what is commonly known as "depreciation" and for contingencies. It is the most important of all the operating reserves and is described later in a special chapter bearing the same title.

**Other Operating Reserves:** Under this heading may be included any reserve which in the opinion of the corporation is desirable or necessary, including reserves for repairs, insurance, taxes or uncollectible accounts. Such reserves are usually created for the purpose of equalizing monthly exhibits of operations. Operating expenses do not vary in proportion to the increase or decrease of the output, and one of the pronounced characteristics of the electric lighting business is the great

decrease in earning power during the summer season. The accounts, to be truly representative, should reflect such characteristics, and the use of reserves to counteract the effect of normal business conditions, while perhaps not absolutely improper, may easily be carried to extremes.

### CAPITAL STOCK

By capital stock is meant those securities which represent the interest of the owners of the property. Book-keeping is so thorough in its methods that the amount paid by the stockholder or owner is included on the liability side of the balance sheet upon the theory that having paid money into the business he expects to take money out. Different kinds of shares of stock may be issued and are classified as debenture stock, preferred stock (first or second), and common stock. Different stocks may have different dividend rates, participation powers, voting powers, etc. A separate account should be raised for each class of capital stock issued, and no two stocks should be combined in one account unless they are equal in all these various rights, as well as the conditions under which they may be retired. The respective accounts should be credited with the par value of the stocks as issued. The premiums realized upon the sale thereof should be credited to the account heretofore described, "premiums on Stock."

### FORM OF BALANCE SHEET

The balance sheet form which follows is prepared to illustrate the principles advocated herein. It contains the accounts that have been recommended as suitable for the use of corporations engaged in the electric lighting

## COMPARATIVE BALANCE SHEET

Assets				Liabilities			
Item	Balance at close of period	Balance at beginning of period	Net change during period	Item	Balance at close of period	Balance at beginning of period	Net change during period
Plant investment.....				<i>Funded debt:</i>			
Plant investment, work in progress...				First mtg. bonds.....			
				Debenture bonds.....			
				Real estate mortgages.....			
<i>Quick assets:</i>				<i>Current liabilities:</i>			
Cash.....				Bills payable—demand.....			
Bills receivable.....				Accounts payable.....			
Accounts receivable.....				Coupon interest matured.....			
Interest and dividends receivable....				Dividends declared.....			
<i>Business assets:</i>				Customers' deposits.....			
Material and supplies.....				Service extension.....			
Prepayments.....				<i>Accrued liabilities:</i>			
				Unmatured coupon interest.....			
<i>Nominal assets:</i>				Unmatured real est. mtg. int.....			
Special deposits, coupon int.....				Unmatured loan interest.....			
				Taxes accrued.....			
<i>Investments:</i>				Rents accrued.....			
Bound.....				Wages accrued.....			
Free.....				Misc. exp. accrued.....			
<i>Treasury securities:</i>				<i>Reserves:</i>			
Bonds.....				<i>Corporate:</i>			
Stock.....				Premium on stock.....			
				Premium on debt.....			
<i>Suspense:</i>				<i>Operating:</i>			
General.....				Renewal and contingency.....			
Casualties.....				Other operating reserves.....			
Supplies expense.....				<i>Capital stock:</i>			
Accounts receivable.....				Debenture.....			
Misc. billing.....				Preferred.....			
Debt, discount and expense.....				Common.....			
				Profit and loss.....			
<b>Totals.....</b>				<b>Totals.....</b>			

business. It will be noted that the form provides for a comparison of the various amounts at the time the balance is struck with the amounts appearing in the same account at some other period. This comparative feature is one which should accompany all financial statements. Figures mean nothing by themselves; it is only in their comparative relation that their true significance is realized.

## **PART II**

### **INCOME ACCOUNTS.**

**CHAPTER I. DEFINITION OF INCOME.**

**CHAPTER II. GROSS EARNINGS FROM OPERATIONS**

**CHAPTER III. OPERATING EXPENSE ACCOUNTS.**





## CHAPTER I

### INCOME

The income of an electric lighting corporation is derived from the use and manipulation of the property devoted to the purposes of the business, and from the returns not directly connected with the operation of the plant. These two sources of income, because they have a divided significance, should be separately accounted for; and they are known respectively as "operating income" and "non-operating income."

Operating income is divided into "gross earnings from operation" and "operating expenses," the excess amount of earnings over expenses being called "net earnings from operation." By gross earnings from operation are meant all amounts of money due to the corporation for electric current supplied or for services rendered, and all amounts representing the profit on merchandise sold or on miscellaneous work performed for its customers or others. By operating expenses are meant all outgoes, including property consumed incident to the production and sale of electric current, the services rendered, amounts paid for taxes and the amount of uncollectible accounts.

Operating expenses have been sometimes defined as including only those costs which are within the control of the corporation, the effect being to eliminate from the schedule such items as taxes, uncollectible accounts, etc. In the opinion of the author, operating expenses should include every cost incident to the production and sale

of the product, including therein not only taxes and uncollectible accounts, but also a reserve for renewals and contingencies, rentals of real-estate and every other outgo which the corporation may properly expect to recover in its rates. The corporation is thus enabled to prepare a comprehensive figure for the cost of operation, which, when deducted from the gross earnings, will show the actual net earnings from operation applicable to the amount invested in property devoted to the purposes of the business.

The statement which shows these several captions mentioned above is called the statement of income. This is an outline of all the financial transactions of the corporation comprehensively grouped about distinctive divisions and attributes of its organization. In the following classification there are given the various accounts needed in income from operation section of the statement, grouped under their respective heads and assembled in such a manner as to show their relative position in the schedule.

It will be noticed in the classification that gross earnings from operation diminished by the amount of operating expenses represent the operating income. With the determination of this amount the purely electric light accounts may be said to end.

• What follows thereafter has to do with the corporate functions, so to speak, and relates to matters which, while of great interest to the owners of the property, are not affected with a public interest. For instance, the extent to which the amount of the operating income is subject to the control of the stockholders depends upon the obligations which they have assumed for borrowed capital. The amount of the operating income may also be increased from the proceeds of sums invested in out-

side enterprises described in the balance sheet as investments, and the revenue therefrom and the expenses incidental thereto should be segregated as non-operating revenue. The items that go to make up this caption, however, vary in companies according to their individual conditions and financial history; therefore they are not matters which may be standardized or in regard to which special instruction is required. A further discussion of the income section of the statement of income, profit and loss and its proper contents is given in a subsequent chapter.

The following classification provides for an extended analysis of the items of operating expenses that may exceed the requirements of some corporations. Experience shows, however, that as the business grows and the organization is extended the management depends more and more on these very records for a comprehensive view of the operations all over the field. Another reason for analyzing the expenses closely is to enable the accounting department to furnish each officer or division chief with the details of the cost of the work for which he is responsible.

The operating expenses are first divided into seven main groups and each of these groups is again sub-classified. The definition furnished for each sub-classification mentions the principal items embraced thereunder, and these items may be also accorded a position in the main schedule of operating expenses if occasion requires. It is therefore possible for a corporation to maintain a minimum of analysis as provided by the main group, or a maximum of analysis by the use of the sub-classification accounts and the principal items associated therewith.

The index numbers assigned to the accounts listed in the sub-classification schedule of operating expenses are

for the purpose of identifying these accounts with the definitions which follow. In a later portion of the book will be found a chapter on "Account Symbols," and the index numbers should not be confounded therewith.

## CLASSIFICATION OF OPERATING INCOME ACCOUNTS

### Gross Earnings from Operation

Commercial Lighting  
 Commercial Power  
 Municipal Street Lighting—Arc  
 Municipal Street Lighting—Incandescent  
 Municipal Building Lighting  
 Municipal Building Power  
 Current Sold to Other Public-Service Corporations  
 Miscellaneous Service  
 Profit on Merchandise Sold  
 Profit on Jobs  
 Total Gross Earnings from Operation

## OPERATING EXPENSES

### Main Classification

TITLE	SCOPE
Production—Steam	Cost of electric current delivered to station terminal board.
Hydraulic	
Gas engines	
Transmission	Cost of conducting current to sub-stations and cost as delivered to distribution system.
Distribution	Cost of conducting current from sub-station terminal board to customers' premises and metering same therein.

Consumers' Expense	Cost on customers' premises.
Commercial	All office work in connection with customers' accounts, reading meters, rendering bills, collection bureau, bill questions, installation and contract records, amount of uncollectible accounts.
New Business	Cost of securing new business.
General	Administrative and miscellaneous.

## SUB-CLASSIFICATION OF OPERATING EXPENSES

### Production—Steam.

Index No. 1.

#### SUB-CLASSIFICATION.

Sub-index No.

Superintendence and Care.....	1
Boiler Labor.....	2
Engine Labor.....	3
Electrical Labor.....	4
Fuel.....	5
Water.....	6
Lubricants.....	7
Supplies.....	8
Station Expense.....	9
Repairs—Sundries.....	10
Station Structure.....	11
Boilers.....	12
Boiler Apparatus.....	13
Piping.....	14
Engines—Turbines.....	15
Mechanical Apparatus.....	16
Electrical Apparatus.....	17
Tools and Instruments.....	18
Purchased Power.....	19

<b>Production—Hydraulic</b>	<b>Index No. 2.</b>
<b>SUB-CLASSIFICATION</b>	<b>Sub-index No.</b>
Superintendence and Care.....	1
Hydraulic Labor.....	2
Electrical.....	3
Lubricants.....	4
Supplies.....	5
Station Expense.....	6
Repairs—Sundries.....	7
Station Structure.....	8
Dam and Pipe Line.....	9
Gates and Turbines.....	10
Electrical Apparatus.....	11
Tools and Instruments.....	12

<b>Production—Gas</b>	<b>Index No. 3.</b>
<b>SUB-CLASSIFICATION</b>	<b>Sub-index No.</b>

### **Producer Gas Generation**

Generator Fuel.....	1
Steam for Gas.....	2
Gas Making—Labor.....	3
Repairs—Station Structure.....	4
Equipment.....	5
Supplies.....	6
Superintendence and Care.....	7

### **Current Generation**

Superintendence and Care.....	8
Producer Gas.....	9
Purchased Gas.....	10
Engine Labor.....	11
Electrical Labor.....	12
Lubricants.....	13
Supplies.....	14
Station Expense.....	15

	Index No.
Repairs—Sundries.....	16
Station Structure.....	17
Gas Engines.....	18
Mechanical Apparatus.....	19
Electrical Apparatus.....	20
Tools and Instruments.....	21
NOTE: Sub-index No. 1-7 (producer gas generation) are the details of sub-index No. 9 (producer gas) in the general classification "current generation." Hence the cost of producer gas generation (sub-index No. 1-7) does not form a separate total.	
<b>Transmission :</b>	
Maintenance Transmission Lines.....	4
Sub-station Labor.....	5
Sub-station Supplies and Expenses..	6
Maintenance Sub-station Buildings.....	7
Maintenance Sub-station Equipment...	8
<b>Storage Battery :</b>	
Operation Labor.....	9
Operation Supplies.....	10
Repairs—Batteries.....	11
Accessories.....	12
<b>Distribution :</b>	
<b>OPERATION</b>	
Salaries.....	13
Supplies and Expenses.....	14
Subway Rental.....	15
Setting and Removing Meters and Transformers.....	16
<b>MAINTENANCE</b>	
Subways.....	16½
Pole Line.....	17
Underground Conductors.....	18
Services.....	19

	Index No.
Transformers.....	20
Meters.....	21
<b>Consumers' Expense :</b>	
Commercial Arc Lamps.....	22
Incandescent Lamps.....	23
Customers' Installation.....	24
Municipal Street Lighting—Arcs.....	25
Incandescent.....	26
<b>Commercial Expense :</b>	
Office Salaries and Expenses.....	27
Office Supplies and Expenses.....	28
<b>New Business :</b>	
Salaries.....	29
Miscellaneous Supplies and Expense....	30
Soliciting.....	31
Advertising.....	32
Wiring and Appliances.....	33
<b>General Expenses :</b>	
Salaries of General Officers.....	34
Salaries of General Office Clerks.....	35
Printing and Stationery—General.....	36
General Office Expense.....	37
Expense—General.....	38
Legal Expense—General.....	39
Injuries and Damages.....	40
Insurance.....	41
Taxes.....	42
Contingent Expense.....	43
Rentals.....	44
Welfare Work.....	45
Stable Expense.....	46
Storeroom Expense.....	47
Duplicate Charges—Credit.....	48



## CHAPTER II

### GROSS EARNINGS FROM OPERATION ACCOUNTS

On the basis of the classification given for the gross earnings from operation accounts, the following entries should be made, respectively:

**Commercial Lighting:** Credit to this account the amount of bills rendered to commercial customers for electric current used for lighting purposes, irrespective of the rate at which it may be sold.

**Commercial Power:** Credit to this account the amount of bills rendered to commercial customers for electric current used for power purposes, irrespective of the rate at which it may be sold. Wherever a mixed circuit exists, consisting of light and power devices connected to the same main, the amount should be credited to the commercial lighting account.

**Municipal Building Lighting:** Credit to this account the amount of bills rendered to the municipality for lighting municipal buildings.

**Municipal Building Power:** Credit to this account the amount of bills rendered to the municipality for electric current supplied to buildings for power purposes. Wherever a mixed circuit exists, consisting of light and power devices connected to the same main, the amount should be credited to the municipal lighting account.

**Municipal Street Lighting—Arc:** Credit to this account the amount of the bills rendered to the municipality for lighting the streets by means of arc lamps.

**Municipal Street Lighting—Incandescent:** Credit to this account the amount of the bills rendered to the

municipality for lighting the streets by means of incandescent lamps.

**Current Sold to Other Public Service Corporations:** Credit to this account the amount of bills rendered for electric current supplied to other public service corporations, such as electric lighting companies or railroad corporations, the current being used by them in the furtherance of their own business.

**Miscellaneous Services:** Credit to this account the amount of bills rendered to customers for the rent of meters, electric motors, fans, heating devices or other appliances. If desired, this account may be subdivided as between commercial customers and the municipality.

**Profit on Merchandise Sold:** Credit to this account the profit, or the excess of the amount of the bill as rendered over the cost to the corporation, to merchandise sold, such as lamps, motors, heating appliances, or other devices and supplies.

**Profit on Jobs:** Credit to this account the profit on all jobbing or other work performed by the corporation for its customers or others. By profit is meant the difference between the amount of the bill rendered and the cost of the work to the corporation.

It was formerly the practice to divide gross earnings from operation to show the derivation from incandescent lamps, arc lamps or other devices. The great diversity in the present day use of electric current, coupled with the fact that the customer rarely desires to go to the extra expense of subdividing wiring in his premises, has made it impracticable to continue the old form of analysis. Even the classification as given above can no longer be absolutely maintained. Probably the most useful form of analysis is to divide the current under the rate at which it is sold; this is increasingly becoming the modern practice.

## CHAPTER III

### OPERATING EXPENSE ACCOUNTS

Taking each operating account with its index number as given in the previous classification, the accountant should make the following charges thereto:

#### STEAM PRODUCTION

Index No.	Sub-index No.	
1	1	<b>Superintendence and Care:</b> Salaries of superintendents and assistants, chemists, clerks, janitors, watchmen, elevator men, and also that portion of the engineering staff chargeable to the generating plant.
1	2	<b>Boiler Labor:</b> Labor, in the boiler room and elsewhere in and about the premises, having to do with making steam.

##### *Principal Items:*

- Fire room engineers and assistants
- Water tenders
- Firemen
- Coal handlers
- Ash handlers
- Boiler cleaners
- Feed pumpmen

1	3	<b>Engine Labor:</b> Labor on prime movers
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##### *Principal Items:*

- Chief engineer and assistants
- Engineers
- Oilers
- Wipers }
- Machinists

Index No.	Sub-index No.	
1	4	<b>Electrical Labor:</b> All labor in connection with the electrical apparatus and devices, beginning with the dynamos directly connected or belted to the prime movers and including the switchboard, feeder terminal board and extending to where the electric current leaves the station for the transmission and distribution system.

*Principal Items:*

System operators or load despatchers  
 Foreman regulators  
 Regulators and assistants  
 Switchboard men  
 Brushmen  
 Wipers  
 Wiremen

1	5	<b>Fuel:</b> Fuel, whether coal or oil, used under the boilers at the cost delivered in the bunkers or tanks; also the cost of removal of ashes.
1	6	<b>Water:</b> Cost of feed water and boiler compound. Water used for general station purposes should not be included.
1	7	<b>Lubricants:</b> Cost of lubricants for the moving machinery in the generating plant. The account does not include oil for transformers, grease for wagons or oil for lanterns.

*Principal Items:*

Cylinder, machine, dynamo oil  
 Grease, graphite, and kerosene

1	8	<b>Production Supplies:</b> All supplies, tools, etc., used in the generating plant and con-
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Index No.	Sub-index No.
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sumed in the operating process, the replacement of which does not constitute a repair or renewal.

*Principal Items:*

Waste, packing, wipers  
 Gauge glasses, gauge washers  
 Manhole gaskets, handhole gaskets  
 Fire room tools, steam and air hose  
 Bolts, screws, nails, tools  
 Dynamo brushes

1	9	<b>Station Expense:</b> The general and miscellaneous expenditures in the generating plant not specifically chargeable to other accounts.
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*Principal Items:*

Lighting, heating and cleaning system  
 Fire protection system  
 Janitors' supplies, ice water, meals and car fares  
 Stationery, telephone and toilet service  
 Care of streets, yards and sidings

1	10	<b>Repairs—Sundries:</b> Repairs to furniture, fixtures and other property in and about the generating plant not specifically provided for elsewhere. Modifications and betterments, if not provided for by a reserve fund, should be charged under this classification.
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Index	Sub-index
No.	No.

- |   |    |   |
|---|----|---|
| 1 | 11 | <b>Repairs—Station Structure:</b> Repairs to building and permanent fixtures therein. |
|---|----|---|

*Principal Items:*

Plumbing, windows, sashes, roof,  
doors and walls  
Heating and lighting systems  
Grounds and streets, vaults, sheds,  
pits and sidewalks  
Elevators and lockers  
Fire protection system  
Painting

- |   |    |   |
|---|----|---|
| 1 | 12 | <b>Repairs—Boilers:</b> Repairs to boilers, including foundations and settings. |
|---|----|---|

*Principal Items:*

Brick work, bridge wall, arches,  
jumps  
Grate bars, stoker bars and webbs  
Furnaces and valves  
Superheaters, damper regulators  
and tubes

- |   |    |  |
|---|----|--|
| 1 | 13 | <b>Repairs—Boiler Apparatus:</b> Repairs to feed-water, coal and ash handling systems and to auxiliary apparatus in the fire room. |
|---|----|--|

*Principal Items:*

Feed pumps  
Blower engines  
Stoker engines  
Coal conveyor:  
Digger, trolley and cable tower  
Crusher and belt links, brackets  
Wheels, chutes and gates

Index No.	Sub-index No.
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Ash conveyor:

Cars, winches, motors and  
buckets

Shaft, chain, motors and wheels

Filters:

Boiler compound injector and  
pump

Heaters, primary and secondary

Economizers and water meters

1	14	<b>Repairs—Piping:</b> Repairs to piping system in connection with the making of steam and delivery thereof to the prime movers.
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*Principal Items:*

Feed water piping, cold main and  
hot main

Salt water suction

Valves

Joints

Jackets, ash pit drains and ash  
pocket syphons

Oil drains from engine crank pits,  
receiving tanks, filter pumps to  
engine valve

Steam and exhaust line systems,  
sewer connections

Air line

1	15	<b>Repairs—Engines and Turbines:</b> Repairs to prime movers. If plant contains both reciprocating engines and turbines, the cost may be further subdivided accordingly.
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1	16	<b>Repairs—Mechanical Apparatus:</b> Repairs to apparatus connected with or auxiliary to the prime movers.
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Index	Sub-index
No.	No.

*Principal Items:*

Condensers, packing tubes, renewing tubes, heads and doors and miscellaneous

Pumps, air and circulating, wet vacuum, oil systems

Belting, motors, hoists and cranes, shafting, pulleys, etc.

- |   |    |   |
|---|----|---|
| 1 | 17 | <b>Repairs—Electrical Apparatus:</b> All repairs to the electric generating plant, station cables, switchboards and instruments, and station terminal board (not including wiring for the lighting of station). |
|---|----|---|

*Principal Items:*

Rewinding

Rewinding armatures and fields

Commutators

Switchboard instruments—indicating and recording—lightning arresters, rheostats

Circuit breakers, etc.

- |   |    |   |
|---|----|---|
| 1 | 18 | <b>Repairs—Tools and Instruments:</b> Repairs to and replacement of tools (except fire tools provided for elsewhere). |
|---|----|---|

*Principal Items:*

Blacksmiths', machinists' and pipe fitters' tools

Pump room tools, engine tools and cutting tools

- |   |    |   |
|---|----|---|
| 1 | 19 | <b>Purchased Power:</b> The electrical power purchased of other companies, according to the bills as rendered |
|---|----|---|



## HYDRAULIC PRODUCTION

Index No.	Sub-index No.	
2	1	<b>Superintendence and Care:</b> Salaries of superintendents and assistants, clerks, janitors, watchmen, and also that portion of the engineering staff chargeable to the hydraulic plant.
2	2	<b>Hydraulic Labor:</b> Labor operating hydraulic machinery.
2	3	<b>Electrical Labor:</b> All labor in connection with the electrical apparatus and devices beginning with the dynamos and the switch-board and extending to where the current leaves the station for the transmission system.
2	4	<b>Lubricants:</b> Cost of lubricants for all moving apparatus in the hydraulic plant.
2	5	<b>Production Supplies:</b> All tools, supplies, etc., used in the hydraulic plant which are consumed in the operating process.
2	6	<b>Station Expense:</b> The general and miscellaneous expenditures in the hydraulic plant not specifically chargeable to other accounts.
2	7	<b>Repairs—Sundries:</b> Repairs to furniture, fixtures, and other property in and about the hydraulic plant not specifically provided for elsewhere.
2	8	<b>Repairs—Station Structure:</b> Repairs to buildings, including permanent fixtures therein, and to the streets and sidewalks at the hydraulic plant.
2	9	<b>Repairs—Dam and Pipe Line:</b> Labor and material for repairs to dam and pipe line, or sluiceway to the wheel gates.

Index No.	Sub-index No.	
2	10	<b>Repairs—Gates and Turbines:</b> Repairs to wheel gates, turbines or hydraulic apparatus up to and including the water wheel governor.
2	11	<b>Repairs—Electrical Apparatus:</b> All repairs to the electrical generating plant, station cables, switchboards and instruments, station terminal board, step-up transformers and lightning arresters.
2	12	<b>Repairs—Station Tools and Instruments:</b> Repairs to and replacement of station tools and instruments. This does not include switchboard instruments provided for elsewhere.

### GAS PRODUCTION

3	1	<b>Generator Fuel:</b> All fuel used for generating producer gas.
3	2	<b>Steam for Gas:</b> Cost of steam used for gas making purposes.
3	3	<b>Gas Making Labor:</b> All labor operating gas generators, including the handling of fuel and residuals and the removing of ashes.
3	4	<b>Repairs—Station Structure:</b> All repairs to station structure and gas holders.
3	5	<b>Repairs—Equipment:</b> All repairs to gas making apparatus.
3	6	<b>Production Supplies:</b> All supplies, tools, etc., used in the gas generating plant which are consumed in the operating process.
3	7	<b>Superintendence and Care:</b> Salaries of superintendents, assistants, chemists, clerks, janitors, watchmen and that portion of the

Index No.	Sub-index No.
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engineering staff chargeable to producer gas generation.

NOTE: Costs of gas generation for comparative purposes should be reduced to a basis of expense per thousand cubic feet generated.

- |   |    |  |
|---|----|--|
| 3 | 8  | <b>Superintendence and Care:</b> Salaries of superintendent and assistants, chemists, clerks, janitors, watchmen, and also that portion of the engineering staff chargeable to the electric generating plant where the prime movers are gas engines.                         |
| 3 | 9  | <b>Producer Gas:</b> The cost of power gas used or the total power gas generation as shown by the sum total of the sub-index accounts No. 1 to 7, inclusive, under Index No. 3.  |
| 3 | 10 | <b>Purchased Gas:</b> The cost of all gas purchased for gas engine use.  |
| 3 | 11 | <b>Engine Labor:</b> All labor, operating prime movers, which includes the chief engineer and his assistants, oilers, wipers and machinists.   |
| 3 | 12 | <b>Electrical Labor:</b> All labor in connection with the electric apparatus and devices beginning with the dynamos, including the switchboard and feeder terminal board, and extending to where the current leaves the station for the transmission or distribution system. |
| 3 | 13 | <b>Lubricants:</b> Cost of lubricants for the moving machinery in the generating plant.  |
| 3 | 14 | <b>Production Supplies:</b> All supplies, tools, etc., used in the generating plant which are consumed in the operating process.   |

Index No.	Sub-index No.	
3	15	<b>Station Expense:</b> The general and miscellaneous expenditures in the generating plant not specifically chargeable elsewhere.
3	16	<b>Repairs—Sundries:</b> Repairs to furniture and fixtures and other property in and about the generating plant not specifically provided for elsewhere.
3	17	<b>Repairs—Station Structure:</b> Repairs to building and permanent fixtures therein.
3	18	<b>Repairs—Gas Engines:</b> Repairs to gas engines, gas and water piping, ignition and compressed air apparatus, pumps and exhausters.
3	19	<b>Repairs—Mechanical Apparatus:</b> Repairs to apparatus connected with or auxiliary to the prime movers, including line shafting, idlers, belting and clutches.
3	20	<b>Repairs—Electrical Apparatus:</b> All repairs to the electric generating apparatus, station cables, switchboards and instruments and station terminal boards.
3	21	<b>Repairs—Tools and Instruments:</b> Repairs to and replacement of tools and instruments not otherwise provided for.

### TRANSMISSION

- 4      **Maintenance of Transmission Lines:** The cost of operating and repairing trunk lines between generating and sub-stations. If both underground and overhead systems are used by the company, the expenses should be divided accordingly, as follows:
- Operation Conductors—Labor:* Labor operating electrical conductors both

Index  
No.

overhead and underground, including inspection and testing.

*Operation Conductors—Expense:* Car fares, meals and expenses in connection with operating electrical conductors, both overhead and underground.

*Operation Subways—Labor:* Salaries and expenses in connection with subway structure, including manholes and ducts.

*Operation Subways—Expense:* Car fares, meals, etc., in connection with subway structure.

*Operation Subways—Rental:* Rental of ducts leased from other companies.

*Overhead Line—Labor:* Salaries and labor in connection with overhead line, including patrolmen and testers.

*Overhead Line—Expense:* Car fares, meals and expenses in connection with overhead system.

*Repairs—Conductors:* Repairs to electrical conductors, both overhead and underground.

*Repairs—Subway:* Repairs to subway structures, including renewing ducts, enlarging and repairing manholes, repaving streets, etc.

*Repairs—Overhead Line:* Repairs to overhead line, including removal and renewing of poles, cross arms, braces, painting poles, etc.

**Sub-station Labor:** Wages of regulators, brushmen, etc., employed in the sub-station in connection with the apparatus.

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## No.

- 6            **Sub-station Supplies and Expenses:** Car fares, meals, telephones, stationery, etc., and all expenses in the sub-station not specifically provided for elsewhere.
- 7            **Maintenance of Sub-station Buildings:** Repairs to sub-station buildings and permanent fixtures therein, including ground and adjacent streets, vaults, sheds, pits, sidewalks, etc.
- 8            **Maintenance of Sub-station Equipment:** Repairs to apparatus in the sub-station, including sub-station cables, switchboards and instruments, station terminal board, etc.

**STORAGE BATTERY**

- 9            **Storage Battery Labor:** Salaries of superintendent, clerks and battery men, including inspectors and testers.
- 10           **Storage Battery Supplies:** Cost of acid and distilled water in cells, soda, sponges, brooms, mops, waste, rags, hydrometers, thermometers, automatic cell fillers, rubber hose, gloves, shoes, paint, etc., and brushes for boosters and compensators.
- 11           **Maintenance Batteries:** Renewing of worn-out cells, including diaphragms, negative and positive plates, lead in strip, spelter, pails, candles, dry boards, tank bands, sheet lead, glass plates, glass covers, hydrogen generators, jumpers, clamps, lamp black, etc.

## Index

No.

12

**Maintenance Battery Accessories:** Repairs to tanks, battery room floor, switches, regulating apparatus, boosters and compensators.

**DISTRIBUTION**

13

**Distribution Salaries:** Salary of superintendents and clerks and also that proportion of the salaries of the engineering staff of the company which is chargeable to distribution.

14

**Supplies and Expenses:** Salaries for and expenses of making maps and records of underground and overhead lines, car fares, meals, stationery, telephone, postage and etc., in the office of the superintendent of the distribution department, and also such tools as cannot be charged to specific accounts but are in general use all over the system.

15

**Subway Rental:** The amount paid as rental for underground conduits rented from other companies.

16

**Setting and Removing Meters and Transformers:** Wages and supplies in setting transformers in consumers' premises or on poles adjacent thereto; also the cost of setting meters and of connecting and disconnecting services.

16½

**Maintenance of Subways:** All expenses in connection with underground conduits, as follows:

*Labor and Expense—Subways:* Salaries and expenses in connection with subway structure, including manholes and ducts.

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No.

*Repairs—Subways:* Wages, expenses and supplies repairing subway structure, including ducts, manholes, hand-hole boxes, repaving streets, etc.

- 17      **Maintenance of Pole Line:** All expenses in connection with the operation of the overhead line, as follows:

*Labor and Expense—Conductors:* Salaries and expenses of patrolmen, testers, etc., on overhead conductors.

*Labor and Expense—Overhead Line:* Salaries and expenses in connection with the overhead line.

*Repairs—Overhead Conductors:* Wages, expenses and supplies repairing damaged overhead conductors.

*Repairs—Overhead Line:* Wages, expenses and supplies removing and renewing poles, cross-arms, braces, insulators, painting poles, repaving streets, etc.

- 18      **Maintenance of Underground Conductors:** All expenses in connection with underground conductors as follows:

*Labor and Expense—Conductors:* Salaries and expenses of patrolmen, testers, etc., on underground conductors.

*Repairs—Underground Conductors:* Wages, expenses and supplies repairing damaged underground conductors.

- 19      **Maintenance of Services:** Wages, expenses and supplies repairing services both underground and overhead.



## Index

## No.

20

**Maintenance of Transformers:** Labor and material employed in repairing transformers, including renewing oil, repainting, rewinding, removal and replacing.

21

**Maintenance of Meters:** Salaries and expenses of superintendents and clerks in meter bureau, testers, repair men, materials for repairing meters and all office expenses, as follows:

*Meters—Salaries and Expenses:* Salaries and expenses of superintendents and clerks in the meter bureau, and also that portion of the salaries of the engineering staff of the company properly chargeable to this account.

*Meter Repairs:* Salaries, expenses and supplies repairing meters, including new parts, new jewels, cleaning and painting.

*Meter—Testing:* Salaries and expenses of testers for meters in customers' premises or in meter shops.

*Meter Expense:* Stationery, telephone, postage in meter department, as well as lighting, heating, ice water, etc.

**CONSUMERS' EXPENSE**

22

**Commercial Arc Lamps:** Cost of trimming, inspecting and repairing arc lamps on consumers' premises.

*Principal Items:*

Setting and removing

Repairs to parts

Changing for repairs and adjustment

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Testing during adjustment and  
after repairs

Proportion of arc lamp shop ex-  
pense chargeable thereto

Carbons, globes, etc.

23

**Incandescent Lamps:** Cost of first installa-  
tion of incandescent lamps on consumers'  
premises and the subsequent renewal there-  
of, including cartage and delivery expenses,  
cost of photomentering incandescent lamps,  
as follows:

*Incandescent Lamps—Installation:* Cost  
of the first installation of incandescent  
lamps on customers' premises unless  
consumer is charged for the first  
installation or unless it is the policy of  
the company to charge the first installa-  
tion to construction.

*Incandescent Lamps—Renewal:* Cost of  
renewing incandescent lamps on con-  
sumers' premises, including cartage  
and delivery expense and cost of photo-  
metering incandescent lamps. This  
account should be credited with any  
rebates received for the return of  
stubs or allowances relating thereto.

24

**Customers' Installations:** All labor and  
material furnished gratuitously to consum-  
ers for inside work, cost of municipal and  
Board of Fire Underwriters' certificates, as  
follows:

*Wiring—Repairs:* All labor and ma-  
terial furnished gratuitously to con-  
sumers for inside work.

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*Principal Items:*

Attention to complaints or to  
improving the character of  
service

Replacing or repairing wiring,  
fixtures or electrical appli-  
ances

Moving appliances from place  
to place in house, recon-  
necting same

*Inspection—Salaries and Expenses:*  
Cost of inspection of consumers'  
premises.

*Principal Items:*

Charge for municipal cer-  
tificates

Charge for Board of Fire  
Underwriters' inspection  
certificates

Proportion of the salaries and  
expenses of the engineering  
staff or of other depart-  
ments than the distribution  
department, engaged in  
technical work, properly  
chargeable to this account.

25

**Municipal Street Lighting—Arc Lamps:**  
Labor and material for operating municipal  
street arc lamps, including carbons, globes,  
etc.

*Arc Lamp Repairs:* Cost of changing  
location of lamp posts, changing lamps  
for repairs and adjustments, renewals,

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No.

repairs of mast arms, hangers, poles, ropes, etc., painting poles; also that proportion of the arc lamp shop expense chargeable thereto.

26

**Municipal Street Lighting—Incandescent Lamps:** Inspection, first installation and renewals; as well as labor and material for operating street incandescent lamps.

*Incandescent Lamp Repairs:* Labor and material for repairing street incandescent equipment.

## COMMERCIAL EXPENSE

27

**Office Salaries:** Proportion of salaries and expenses of general officers and assistants in charge of commercial departments, and salaries of bookkeepers and all clerks in the accounting and collecting departments having to do with consumers' accounts, as follows:

*Salaries and Expenses—Meter Indexers:* Salaries and expenses of meter indexers, including indexers' lamps.

*Salaries and Expenses—Accounting Department:* Proportion of salaries and expenses of general officer and assistants in charge of commercial department, and salaries of bookkeepers and all clerks in the accounting department having to do with consumers' accounts.

*Salaries and Expenses—Collection Bureau:* Salaries and expenses of chief and assistants in collection bureau; col-

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lectors' salaries, badges, car fares and other cost of delivering bills.

*Salaries and Expenses—Contract Department:* Salaries and expenses in contract department, other than such as are chargeable to new business, including attention to bill questions.

- 28      **Office Supplies and Expenses:** Stationery, meals and car fares in commercial department.

## NEW BUSINESS

- 29      **Salaries:** That proportion of the salaries and expenses of the management and clerks in the agency and contract departments chargeable to new business.

- 30      **Miscellaneous Supplies and Expenses:** Office expenses of new business department.

- 31      **Soliciting:** Salaries and expense of canvassers, as follows:

*Salaries—Canvassers:* Salaries and commissions for soliciting new business, preparing estimates, engineering advice, etc.

*Expenses—Canvassers:* Personal expenses of staff incurred in soliciting new business; also all office sundries in connection therewith.

- 32      **Advertising:** All the payments for advertising work, as follows:

*Salaries and Expenses—Advertising:* Salaries and expenses of advertising manager and clerks.

*Sundries—Advertising:* Advertising sundries, including booklets, dodgers,

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newspaper advertisements, posters, bulletins and all related items.

- 33      **Wiring and Appliances:** Cost of all work or devices furnished to consumers without charge, such as:

*Free Wiring:* Cost of wiring in consumers' premises furnished gratuitously to induce new business.

*Free Signs:* Cost of electric signs to consumers, including delivery and connection charges and expenses in connection therewith.

**GENERAL EXPENSES**

- 34      **Salaries of General Officers:** The salaries and expenses of officers of the company, being particularly those elected by the board of directors; also directors' fees.
- 35      **Salaries of General Office Clerks:** Salaries of all employees in the general office, as follows:

*Accounting Department Expenses:* Proportion of salaries of general officer and assistants in accounting department—cashiers, bookkeepers and clerks—chargeable to this account.

*Purchasing Department Expenses:* Salaries and expenses of purchasing agent and staff.

*General Service Expenses:* Salaries and expenses of general service in office, including mail clerks, stenographic department, telephone operators etc.

- 36      **Printing and Stationery:** Stationery and office supplies in the general office.

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37

**General Office Expense:** Sundry expense in the general office, as follows:

*Office Sundries:* Sundry expenses in general office.

*Principal Items:*

Advertising stockholders' meetings

Maps, exchange on remittances

Post-office box and safe deposit box

Traveling expenses and charitable contributions

Rentals and janitors' supplies

Bond and stock expenses

Meals and car fares

*Postage, Telephone, Telegrams:* Expenses of this nature in the general office.

38

**Expense—General:** Salaries and expenses of the technical staff which may not be chargeable to any of the foregoing operating or construction accounts; also any expense general to the business not chargeable specifically to general office accounts.

39

**Legal Expense—General:** Monthly proportion of annual retainer paid to counsel and all legal disbursements other than for accidents and damages.

40

**Injuries and Damages:** Cost of accidents and damages to property and persons, including employees; damages done by the company's employees to property of others; medical services; settlement of claims and

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legal expense connected therewith; salaries and expense of claim agents and assistants, and wages paid to disabled employees while off duty.

41 **Insurance:** The monthly pro rated amount of the annual premiums paid for insurance.

42 **Taxes:** The monthly proportion of the annual amount assessed for taxes—federal, state and municipal.

43 **Contingent Expense:** Charge to this account, month by month, the amount estimated to be necessary to cover such wear and tear, obsolescence and inadequacy as have accrued during the month in the tangible property of the corporation, as well as such a portion of the life of intangible property as has expired or been consumed during the month and the estimated amount necessary to provide a reserve for contingencies. The amount charged to this account should be concurrently credited to the reserve account for renewals and contingencies.

The amount estimated to be necessary to cover such wear and tear, obsolescence and inadequacy as have accrued during any month should be determined by the corporation. The amount may be derived from a consideration of the corporation's history and experience; and the accrual may be on the basis of kilowatt-hours sold or on the basis of a percentage of the gross revenue from the sales of electric current.

When any property is retired from service, the amount—estimated if not known—



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originally charged to a property account in respect thereof should be credited to such property account, and the original money cost of such property, less salvage, if any, should be charged to the reserve account for renewals and contingencies. The value of the salvage is of course lessened by the cost of its recovery. Where property is substantially continuous and cannot be satisfactorily individualized, it should be kept in efficient operating condition through repair, and the renewals and replacements of parts thereof should be considered repairs. In the case of buildings, towers, bridges trestles and other separate structures capable of being readily individualized, charges to this account should be sufficient to provide in the reserve account by the time such structures go out of service an amount equal to the original money cost thereof, less salvage.

**NOTE:** The reasons for the establishment of this reserve account are discussed in a special chapter, entitled "Renewal and Contingency Reserve" appearing in a later part of this book.

44

**Rentals:** Amounts paid for the rental of real estate used in the operating processes or for general use. If the real estate is used for purposes represented by a clearing account, the rental should be charged to the clearing account; if for construction, the rental should be charged to the plant investment account interested.

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45

**Welfare Work:** All disbursements on account of employees' welfare plans, including educational courses, employees' associations, entertainments, sick benefits, injured employees, or the like.

46

**Stable Expense:** The cost of operating the stable, including automobiles.

47

**Storeroom Expense:** The cost of operating the storerooms.

NOTE: The accounts represented by index No. 46 and 47 are intended for use where the cost of operating the stable and storerooms is not distributed through the medium of clearing accounts.

48

**Duplicate Charges—Credit:** This is an adjustment account, the entries thereon being credits. Its purpose is to permit charging to the various departments the cost of electric current used in their work, the sum of these charges being counter-balanced by a corresponding credit hereto.

## PART III

### MISCELLANEOUS

CHAPTER I. ACCOUNT SYMBOLS.

CHAPTER II. WORK ORDER SYSTEM.

CHAPTER III. CUSTOMERS' ACCOUNTS AND RECORDS.

CHAPTER IV. ACCOUNTING FOR SUPPLIES.

CHAPTER V. RENEWAL AND CONTINGENCY RESERVE.

CHAPTER VI. THE INCOME ACCOUNT AND WHAT IT SHOULD CONTAIN.

CHAPTER VII. ANALYSIS OF A BALANCE SHEET.



## CHAPTER I

### ACCOUNT SYMBOLS

In connection with an elaborate system of accounts such as herein recommended for the use of electric lighting companies, it very soon becomes apparent that the use of symbols for names of accounts becomes a matter of necessity. The cost of retubing a boiler for instance would be charged to the account, "production—repairs to boilers." The repeated writing of these names on the superintendent's requisition, the purchasing agent's order, the invoice when received and on any other disbursement records that a company may keep involves much work and loss of time. If instead of writing these words the necessary information can be imparted by the use of three numbers, each of which has a separate significance, it is easily seen that a labor-saving device has been created.

The decimal system of account symbols results in this very saving of labor and in addition thereto is flexible and has an unlimited capacity for expansion. Under this system the first or left-hand numbers signify a main classification, thus:

- |   |                             |
|---|-----------------------------|
| 0 | General Expense             |
| 1 | New Business and Commercial |
| 2 | Production Operation        |
| 3 | Production Repairs          |
| 4 | Transmission and Storage    |
| 5 | Distribution                |

- 6     Consumers' Expense
- 7     Property Accounts
- 8-9   Other Ledger Accounts

The second numeral represents a division and the third a subdivision of a main classification. Thus 00 signifies general expense, salaries of general officers; and if the schedule of accounts divides this item into salaries and expenses 000 would signify salaries and 001 the expense of general officers. In the list the decimal system is applied to all the accounts, including operating expense, plant investment and other general ledger accounts. Alphabetical prefixes or suffixes are most conveniently used to indicate districts or stations. There are fifty-two combinations possible in this respect, so that the needs of the largest companies can be adequately met.

In summarizing the results of the application of the decimal system of account symbols to the scheme of accounts, it is seen that by the use of one numeral, ten main classifications may be indicated; by the use of the second numeral, ten divisions of each classification; and by the use of the third numeral, ten subdivisions of each division which makes the total capacity for three numerals one thousand charging units.

Employees find slight difficulty in familiarizing themselves with the symbols; employees outside of the accounting department have to do with only a few numbers. In one large company the phrase "twenties and thirties" has become a colloquialism indicating a class of transactions involving the operation and maintenance of its power houses.

In the following list the decimal system is applied to the accounts heretofore described as suitable to the needs of the electric lighting business:

**GENERAL EXPENSE—0**

00 OFFICERS AND CLERKS	000	Salaries Officers
	001	Expense Officers
	002	Directors' Fees
	004	Salaries Clerks Accounting Department
	005	Salaries Clerks Purchasing Department
	006	Salaries Clerks General Service
01 PRINTING AND STA- TIONERY		
02 GENERAL OFFICE EX- PENSE	021	Miscellaneous
	022	Meals and Car Fares
	023	Janitor's Supplies
	024	Bond and Stock Expense
	025	Postage
	026	Telephone and Telegrams
03 EXPENSE—GENERAL	030	Rent of Property Used in Business
	031	Miscellaneous
04 LEGAL EXPENSE AND DAMAGES	041	Retainer Counsel
	042	Counsel Disbursements
	043	Accidents—Employees
	044	Accidents—Outside Public
	045	Damages Property
05 INSURANCE	051	Fire
	052	Liability
	053	Boiler
	054	Fidelity
	055	Miscellaneous
06 TAXES	061	Municipal
	062	State
	063	Federal
	064	Miscellaneous

07	CONTINGENT	071	Reserve for Renewal and Contingencies
08	WELFARE WORK	081	Educational
		082	Sick Benefit
		083	Pensions
		084	Miscellaneous
09	Sundries	091	Stable Expense
		092	Storeroom
		093	Duplicate Electric Charges

### COMMERCIAL AND NEW BUSINESS—1

10	OFFICE SALARIES	101	Bookkeepers and Bill Clerks
		102	Meter Indexers
		103	Collectors
		104	Miscellaneous
11	OFFICE EXPENSE	110	Stationery Office
		111	Carfare and Meals—Bookkeepers and Clerks
		112	Carfare and Meals—Indexers
		113	Carfare and Meals—Collectors
		114	Office—Miscellaneous
		115	Collection—Miscellaneous
12	NEW BUSINESS OFFICE	121	Salaries Officers and Clerks
		122	Expense Officers and Clerks
13	SOLICITING	132	Salaries and Commissions
		132	Expense
14	ADVERTISING	141	Salaries
		142	Expenses
		143	Office Expense
		144	Miscellaneous
15	WIRING AND APPLIANCES	151	Free Wiring
		152	Free Signs
		153	Miscellaneous



## PRODUCTION—OPERATION—2

20	SUPERINTENDENCE AND CARE	201	Superintendent and As- sistants
		202	Clerks
		203	Janitors and Elevator Men
		204	Watchmen
		205	Engineering Staff
21	BOILER LABOR	211	Water Tenders
		212	Firemen
		213	Coal Handlers
		214	Ash Handlers
		215	Boiler Cleaners
		216	Feed Pumpmen
22	ENGINE LABOR	221	Chief and Assistants
		222	Engineers
		223	Oilers
		224	Wipers
		225	Machinists and Helpers
23	ELECTRICAL LABOR	231	System Operators
		232	Foreman Regulators
		233	Regulators and Assistants
24	FUEL	241	Coal in Bunkers
		242	Removal of Ashes
		243	Oil for Fuel
25	FEED WATER	251	Water
		252	Boiler Compound
26	LUBRICANTS	261	Oil
		262	Grease, Graphite, etc.
27	SUPPLIES	271	Waste and Wipers
		272	Gauge Glasses, Gauge Washers
		273	Gaskets, Manhole and Handhole
		274	Fire Room Tools
		275	Dynamo Brushes
		276	Sundries

28	STATION EXPENSE	281	Lighting, Heating and Cleaning
		282	Fire Protection
		283	Janitors' Supplies, Ice Water
		284	Meals and Carfares
		285	Stationery, Telephone, etc.
		286	Streets, Yards and Sidings
29	PURCHASED POWER	291	Steam Power
		292	Electrical Power

### PRODUCTION—REPAIRS—3

30	SUNDRIES	301	Furniture and Fixtures
		302	Miscellaneous
31	STATION STRUCTURE	311	Plumbing, Windows, Roofs, Walls, etc.
		312	Heating and Lighting Systems
		313	Grounds, Streets, Vaults, Sheds and Sidewalks
		314	Elevators, Lockers
		315	Fire Protection System
		316	Painting
32	BOILERS	321	Brickwork, etc.
		322	Grate Bars, Stoker Bars and Webbs
		323	Furnaces
		324	Valves, Superheaters, Tubes, etc.
33	BOILER APPARATUS	331	Feed Water System
		332	Coal and Ash Handling
		333	Filters, Injectors, Pumps, Heaters and Water Meters
34	PIPING	341	Water Feed Piping
		342	Condensing Water Suction

		343	Valves, Joints, Jackets and Drains
		344	Oiling system
		345	Steam and Exhaust Lines
35	PRIME MOVERS	351	Reciprocating
		352	Turbines
36	MECHANICAL APPA- RATUS	361	Condensers
		362	Pumps
		363	Belting, Hoists and Cranes, Shafting
37	ELECTRICAL APPA- RATUS	371	Rewinding Armatures and Fields
		372	Commutators
		373	Switchboard Equipment
38	TOOLS AND INSTRU- MENTS	381	Boiler Room Tools
		382	Engine Room Tools

#### TRANSMISSION AND STORAGE BATTERY—4

40	OPERATION — CON- DUCTORS	401	Labor Overhead
		402	Expense Overhead
		403	Labor Underground
		404	Expense Underground
41	OPERATION—SUBWAYS	411	Labor
		412	Expense
		413	Subway Rental
42	OPERATION—OVER- HEAD	421	Labor
		422	Expense
		423	Rentals, Rights-of-Way
43	REPAIRS—CONDUCTORS	431	Overhead Lines
		432	Underground Lines
44	REPAIRS—SUBWAYS	441	Ducts
		442	Manholes
		443	Repaving Streets
45	REPAIRS—OVERHEAD	451	Renewing Poles
		452	Renewing Cross Arms, Braces, etc.
		453	Painting

46	SUB-STATION OPERATION	461	Regulators, Brushmen, etc.
		462	Carfares, Meals, Stationery, etc.
47	SUB-STATION REPAIRS	471	Building
		472	Equipment
48	STORAGE BATTERY	481	Labor
		482	Supplies
49	STORAGE BATTERY REPAIRS	491	Batteries
		492	Accessories

### DISTRIBUTION AND CONSUMERS' EXPENSE—5

50	DISTRIBUTION—OPERATION	501	Superintendent and Assistants
		502	Clerks
		503	Draughtsmen
		504	Engineering Staff
		505	Carfares, Meals, Stationery, etc.
		506	Subway Rental
51	SETTING AND REMOVING METERS AND TRANSFORMERS	511	Labor
		512	Expense
52	REPAIRS—SUBWAYS	521	Ducts
		522	Manholes
		523	Repaving Streets
53	REPAIRS—POLE LINES	531	Labor
		532	Expense
54	REPAIRS—CONDUCTORS	541	Overhead Lines
		542	Underground Lines
55	REPAIRS—SERVICE	551	Overhead
		552	Underground
56	MAINTENANCE—TRANSFORMERS	561	Rewinding and Repainting Transformers
		562	Switches and Cutouts
57	MAINTENANCE—METERS	571	Salaries Superintendent and Clerks
		572	Engineering Staff

	573	Renewing, Cleaning and Painting Parts
	574	Testing in Shops
	575	Testing Consumers Prem- ises
	576	Expense, Stationery, Tele- phone, etc.
58 CONSUMERS' EXPENSE	581	Commercial Arcs
	582	Incandescent Lamps
	583	Consumers Repairs and Inspection
	584	Municipal Street Arcs
	585	Municipal Street Incan- descents

## PLANT INVESTMENT—6

60 INTANGIBLE ASSETS	601	Organization
	602	Royalties, Franchises and Licenses
	603	Patent Rights
61 LAND		
62 STRUCTURE	621	Building
	622	Fixtures
63 BOILERS	631	Boilers
	632	Boiler Accessories
	633	Main Steam Line
64 PRIME MOVERS	641	Reciprocating Engines
	642	Apparatus
	643	Turbines
	644	Apparatus
65 ELECTRICAL PLANT	651	Generators
	652	Wiring
	653	Switchboard
66 MISCELLANEOUS GEN- ERATING PLANT EQUIPMENT	661	Shafting, Belting, etc.
	662	Cranes
	663	Pumps
	664	Miscellaneous

67	UNDERGROUND CON-	
	DUITS	
68	POLES AND FIXTURES	
69	CONDUCTORS—TRANS-	691 Underground
	MISSION	692 Overhead
70	EQUIPMENT—SUB-STA-	
	TION	
71	STORAGE BATTERIES	

## CHAPTER II

### WORK ORDER SYSTEM

The effect of a well-designed system of indicant and income accounts is to segregate transactions of a like nature and to group them under proper descriptive headings.

Transactions affecting the operating expense accounts are easily and adequately accounted for in such a grouping for the reason that they are usually of a fairly uniform character. Even when not uniform their fluctuations can be satisfactorily explained when reduced to terms of cost per unit of output, connected load, meters set or number of customers. Moreover, such transactions, being matters of daily routine, do not require specific approval in advance of their performance; and the financial obligations involved are usually met out of current revenues.

Transactions affecting the plant investment accounts, on the contrary, are not sufficiently identified when charged in bulk to the proper indicant accounts. Each separate transaction possesses individual characteristics; and for financial and engineering reasons the proper approval must be obtained for each one before the work is begun. The working units applicable to expense transactions have here no significance, and some other method must therefore be devised to insure that the work is being carried on economically, efficiently and in accordance with the plan as originally approved.

The work order system has been designed to meet these special accounting and engineering requirements in connection with the plant investment transactions. It has been so successful in these respects that it has been extended to include repair transactions and in fact all work not properly chargeable to one of the routine operating expense accounts.

A very desirable although not perhaps an absolutely essential first step in the adoption of a work order system is the preparation of a budget. Towards the end of the year it is customary for the engineering authorities of a company to plan the construction operations for the ensuing year. Included in such a plan would be all the contemplated extensions to the plant, including those which are desirable as well as necessary or imperative. The scope of the plan or budget may even include items which may not be undertaken for one or two years, the object being to insure that a careful and comprehensive survey of the engineering possibilities shall be made a matter of record and that all the work shall be planned on a consistent and logical basis. The items in such a budget should be grouped under characteristic heads, such as generating plants, sub-station plants, distribution systems, etc. Each item should bear a budget number and should be entered on the schedule at the estimated cost. A budget, therefore, is more of an engineering forecast than a definite plan of procedure. Nevertheless, it serves a useful purpose and bears a definite relation to the actual operations undertaken and accounted for under the work order system.

The particular work order system hereafter described is one which is in actual operation and is therefore adapted to meet the needs of the organization where it is installed. The system is flexible, however, and



<b>Job Authorization No.</b> _____	<b>Request No.</b> _____
<b>Construction Dept. No.</b> _____	<b>District Reg. No.</b> _____
<b>To the Controller:</b>	
New York, _____ 19____	
The following is required at	
Please issue order for the necessary labor and material.	
_____ Engineer	_____ Head of Department
<b>DESCRIPTION</b>	

  

<b>Charge to Account of</b> _____	<b>TOTAL, COST \$</b> _____
<b>Reports to be made</b> _____	
<b>Budget No.</b> _____	<b>Budget Est.</b> _____
<b>Budget Bal.</b> _____	
<b>REMARKS</b> _____	





committee, using special forms (No. 1 and No. 2 respectively) for the purpose. If the work is approved by the committee that fact is endorsed on the form. This is then sent to the auditor, who endorses thereon the work order number (called on the forms "job order"). The auditor thereupon opens an account (form No. 3) and forwards the form (No. 1 or No. 2) to the controller, who in the organization referred to is the purchasing

JOB ORDER NO. _____		19
SUPERINTENDENT OF CONSTRUCTION:		
You are authorized to do the following work. Charge all material and labor on account of this work to the Job Order Number given above, and as soon as this work is completed return this order properly signed to the Controller.		
		CONTROLLER
DESCRIPTION OF WORK		
All work completed _____ 19		
All labor and material has been		charged to the above Job Order
Number.		
SUPT. OF CONSTRUCTION		

FORM 4.—Authorization to construct.

agent. The latter issues orders to the construction department (form No. 4 or No. 5) and assigns a folder endorsed with the auditor's number. In this folder are placed all data, correspondence, blue prints or other matter referring to the physical side of the work. When the work is completed the construction department returns the order to the controller with the date of completion endorsed thereon, and a similar notice of



completion is sent to the auditor as well. In the meantime the auditor enters on form No. 3 all financial data, dividing the cost according to the amounts paid for labor, the value of supplies drawn from the storeroom, the amount of invoices received from dealers, and the transportation and all similar expenditures.

The controlling account in the general ledger, called "work in progress," is debited in bulk for all disbursements. It follows, therefore, that if the items on the individual job sheets are at any given moment of time footed and listed, the sum total as listed must be in balance with the amount of the controlling account as it appears in the general ledger at the same moment of time.

Upon the completion of the work the auditor closes up form No. 3 and the total amount as shown thereon is then transferred by journal entry from the work in progress account to the plant investment account. Form No. 3 is then taken out of the work in progress sub-ledger and filed in a binder inscribed with the name of the plant investment account interested.

Thus the plant investment accounts are built up not from random or miscellaneous entries for wages, supplies, invoices, etc., but from individual entries—each entry being the entire cost of a definite piece of work which by the use of the attendant chain of references can be readily identified. This detailed cost sheet, in conjunction with the physical record kept by the controller, constitutes an exhibit which establishes beyond question the integrity of the book values assigned to the plant investment accounts. Through the use of this work order system, therefore, the balance sheet becomes a valid inventory of the plant and property of the company. Moreover, such a system greatly facilitates subsequent

accounting in connection with retirement from service transactions; and it is also an invaluable adjunct to appraisal operations, regardless of the purpose of the appraisals or whether they are carried on under governmental or other auspices.

## CHAPTER III

### CUSTOMERS' ACCOUNTS AND RECORDS

The title to this chapter has been broadened to cover all the record making activities of an electric lighting company that are related in any way to operating revenues. From the larger point of view, customers' accounts include not only the information contained in the ledgers but all the records antecedent thereto and having a bearing thereon. These antecedent records represent the many operations involved in obtaining a customer, connecting him up and placing the facts upon the books. Although the final result includes the work of different departments the departmental operations follow each other in close order, and the course to be followed at any given step in the routine is limited by previous occurrences when once the correct basis has been laid for the handling of the transaction.

It is not possible to outline a standard form of organization to handle customers' accounts. The practices of individual companies differ in this respect, and such methods are chosen as are best adapted to local conditions. This is true also of the various records, which must be adapted to the existing form of organization. Every electric light company, however, has about the same conditions to meet, and the following list of operations may be taken as a basis, the operations being grouped under convenient topical heads, possessing no departmental significance:



## LIST OF OPERATIONS AND RECORDS IN CONNECTION WITH CUSTOMERS' ACCOUNTS

### **Contract:**

Advertising; follow-up system; new buildings projected; canvassing data; contracts secured and the disposition thereof.

### **Inspection:**

Record of new applications received; customers' wiring details; customers' location in reference to company's mains, etc.; Board of Fire Underwriters' and municipal certificates; follow-up records showing progress of work in all departments; records showing customers' installation as to lamps, motors, heating, cooking devices, etc.; records of company's property on customers' premises, such as lamps, motors, meters, transformer, service cut-outs, etc.

### **Distribution:**

Service (U.G. or O.H.) data, etc.; street opening permits, etc.

### **Storeroom:**

Record of material delivered for installation and for lamp renewals, trimming arcs, etc.

### **Meter:**

Record of type, size, location, etc. Testing data.

### **Accounting:**

Applicants' credit, including guarantee deposit data; meter indexers' records; billing and ledger records; records for totalizing earnings; reports to general ledger; cashiers' records; collection bureau records and miscellaneous statistics.

A perusal of the foregoing list will convey an impression of the number and complexity of the routine operations required to connect a customer to the mains. It will also undoubtedly lead to the conclusion that some central authority should be provided to supervise the various transactions and insure that the work proceed effectively and in orderly progression. Delay in connection after the customer is ready for the service means revenue lost; and, more important still, it is a sure cause for

dissatisfaction to the customer. On the other hand, to connect the service before all the formalities have been complied with is not only inadvisable but in certain contingencies might involve serious consequences.

The topics contained in the preceding list will, for convenience, be considered in the order in which they appear thereon, divided in general as to statistical records and customers' accounts.

## I. STATISTICAL RECORDS

**Contract:** These records, while of importance during the progress of the negotiations, generally lose their value as permanent records when the business has been secured. Such facts as may have a future bearing it should be possible to endorse in suitable places on the contract itself.

**Inspection:** At this point the customer's record really begins. The contract having been accepted, recording devices must be designed. The character of these will depend upon local conditions; such as the size of the company; the method of distribution, whether overhead or underground; governmental ordinances, department organization and rates. The larger the company the greater reliance must be placed on routine and system.

Card records are undoubtedly to be preferred as they are flexible and can be grouped according to the stage of the work and passed along from point to point. The principal record, the connection order, may be designed, however, in the shape of one form printed to accommodate the reports of all the departments interested, so that on the completion of the work one sheet of paper contains all the essential facts.

A useful variation of this unit system is the coupon

form. This consists of a central space containing all the facts, surrounded by perforated coupons, each relating to the work of a different department. The coupons contain provisions for the report of the performance, and as each department is staged the corresponding coupon is detached and forwarded to it. When the coupons are returned to the issuing authority, they are clamped to the main sheet and constitute as a whole a complete record of all work performed in connection with the contract. The coupon form has the additional advantage that the central portion is retained in the office and shows at a glance the present status of the progress of the work. Where the unit system, however, is used, a separate card record must be employed for office purposes.

**Distribution:** To cover this point, card records and field books are desirable. Companies located in states having public service commissions will appreciate the necessity of good records in connection with services, for in most commission annual reports information is requested as to the number of services underground, the number overhead, the average length of wire for service and the total wire mileage so employed. Hence a record should be kept for each service, and in addition totalizing machinery must be provided. The physical record may be identified with the financial record by endorsing the work-order number thereon. If the cost is also shown, the record becomes reasonably complete.

A very helpful record is one which may be called the distribution log sheet (form "A"). This is simply a daily record of work, showing the serial number, rating and type of each meter handled by the department throughout the day. The record shows the locations from which or to which the meters were taken. A copy



port from the storeroom that a meter has been withdrawn for installation on the customer's premises; and a log sheet, prepared by the distribution department, of the actual work performed on the customer's premises—it would seem as if all chances for error had been reduced to a minimum.

**Storeroom:** A card record of customers, showing among other things whether the company has incandescent lamp renewal obligations or not, is necessary. This record may be arranged to show any property of the company that is delivered from the storeroom to the customers' premises.

**Meter:** A discussion of the accounting work and records in connection with the meters of an electric lighting company should be based upon two things:

(1) The consideration of the meter as a piece of property owned by the company.

(2) The consideration of the meter as a registering device to be accurately maintained for measuring the energy generated by the company and sold to the consumer.

The records for the meter as a piece of property have their inception with the receipt of the meter from the manufacturer by the general storeroom of the company or possibly by a meter storeroom.

Form "B" shows a sheet from a typical meter storeroom ledger. The meter is assigned a company serial number and spaces are provided on the ledger sheet for complete data of the rating and type of meter, the date of receipt and the date and manner of final disposal. Provision is also made on this storeroom ledger sheet for detailed entries of all movements of the meter while on the company's or the consumer's premises. These entries furnish the official company record for the loca-



tion of any particular meter at all times by its serial number.

Without entering into a completely detailed description of the forms and operations covering the movements of meters, a brief statement of the system can be made. Meters should be issued from the storeroom only on written order. The wireman signs a charge slip indicating on what premises the meter is to be installed. This charge slip is made in duplicate. The original is maintained in the storeroom for the storeroom records and the duplicate is forwarded to the accounting or billing department, where the data is at once entered in the proper indexing binder. The meter should not be moved from one consumer's premises to another's; when removed from any premises to which it has been assigned, it should be returned to the storeroom.

On the return of the meter to the storeroom a credit slip should be issued. A duplicate of this credit slip should be forwarded to the billing department as a notice to remove the meter from the indexing binder; but this removal should not be made until the billing department has been advised that the meter is actually in the custody of the storeroom.

An installation inspection should be made on every meter as soon as it is installed. The inspector should approve the connection, location and assignment of the meter and also make a complete record as well as a check of the serial number, constants and other data of the meter. This installation inspection slip should be forwarded to the accounting department; it acts there as a final verification of the information previously taken from the storeroom charge slip and the installation department's daily record of work.

The meter storeroom should prepare monthly a com-

**SUPPLY DEPARTMENT**  
**STATEMENT OF METERS ON HAND**

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DATE	ON HAND		RECEIVED FROM FACTORY		RETURNED TO CUSTOMER		TOTAL		CHANGED OVER		LOST OR JUNKED		NUMBER OF METERS OWNED BY COMPANY										ORDERED		REMARKS
	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	
	SIZE OF METER																								
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plete statement of the movement of all meters during the month. Form "C" is used for this detail and is self explanatory.

The accounting work for maintaining meters in accurate condition can be resolved into three functions:

(1) A system for producing test cards for all meters at the expiration of the proper periodic interval for the various types or capacities of meters or classes of installation.

(2) A system for examining results entered by testers on the test cards and a method of filing the cards by serial number so as to have them available on demand; also an annual survey of all meter serial numbers to insure that a test at the proper periodic interval has been made of all meters.

(3) A system for tabulating the data on the test cards so that the condition of the meters and the methods of test can be intelligently watched and so that data can be provided, when necessary, for reports to city or state commissions or other authorities.

A detailed description of one particular system for performing the above functions may be of interest: This system for issuing meter test cards periodically is based on the use of stencils in connection with an automatic printing machine. When the record of the meter is entered by the accounting department in the indexing binder, a stencil bearing the serial number, capacity, street address and complete location of the meter, is at once made out. This stencil is forwarded to the meter department, which makes a "first" or "installation" test on the meter and then files the stencil according to the periodic classification of the meter. As each month's work is reached the stencils contained in that section of the stencil file are printed by an automatic machine on



113-2-1

METER AS FOUND

Sealed \_\_\_\_\_ Tested F. in S. \_\_\_\_\_ Starting Current \_\_\_\_\_ Amp. \_\_\_\_\_ Top Bearing \_\_\_\_\_ Meshing \_\_\_\_\_ Register Hands \_\_\_\_\_  
 Type Jewel \_\_\_\_\_ Short Circuit \_\_\_\_\_ Creeping \_\_\_\_\_ Rate \_\_\_\_\_ Rev. \_\_\_\_\_ Min. \_\_\_\_\_ Due to \_\_\_\_\_  
 Caused by \_\_\_\_\_ Hrs. per Day \_\_\_\_\_

INDICATING STANDARD INSTRUMENTS														ROTATING STANDARD INSTRUMENT						ACCURACY	
																				$\frac{\%}{S/A}$	AVERAGE %
LOAD	VOLTS	AMPERES	REV.	SEC.	STANDARD WATTS A	METER WATTS B	SERIES COIL CONSTANT	VOLTS	AMPS.	WATTS	OBSERVED REV. STANDARD METER C	TRUE RATIO REV. STANDARD METER D									
LIGHT																					
"																					
"																					
NORMAL																					
"																					
"																					
FULL																					
"																					
"																					
																FINAL AVERAGE.					

FINAL AVERAGE.

## METER AS LEFT

FULL														
"														
LIGHT														
"														

Changed Jewel \_\_\_\_\_ Oiled \_\_\_\_\_ Type Jewel \_\_\_\_\_ Changed Pivot \_\_\_\_\_ Top Bearing \_\_\_\_\_ Moved Magnets \_\_\_\_\_ % Compensator \_\_\_\_\_  
 Commutator \_\_\_\_\_ Brushes \_\_\_\_\_ Tested Com. \_\_\_\_\_ Short Circuit \_\_\_\_\_ Creeping \_\_\_\_\_

FORM D.—Meter test card (inside).

blank test cards (form "D") and issued to the meter testers.

These cards are issued by number to the tester. They are signed for and accounted for individually, in order to insure that the loss of a card does not cause the meter to remain untested until its stencil is again reached at the end of the period or at the annual survey of the file.

The test results obtained are carefully checked before the test cards are finally filed. This check is made by a man intimately familiar with all the technical requirements of the various forms of meter tests, as well as with the company's installation methods and rules and the assignment of the proper type and capacity of meter for any installation. This "examiner" checks all the data entered on the card and verifies a sufficient number of the calculations to insure the consistency of the results obtained.

Before the identity of a day's results is destroyed by the filing of the test cards, they are sorted and the results analyzed and tabulated very much in detail, so that the performance of the meters can be closely and intelligently watched. If special types of meters, bearings or other detail parts of the meters are under investigation the cards for these particular meters are sorted and tabulated separately from the general run of cards at this time. The details of such sorting or tabulation, however, are dictated by local conditions or requirements.

After the test cards are thus sorted, they are then filed so as to be at once available in answer to requests for information as to the condition of the meter. They can be filed either by the meter serial number or by the customer's name and address, as dictated by local conditions.

The data obtained from the sorting of the cards, when

summarized on a weekly, monthly or yearly basis, constitute the departmental or company meter statistics and provide a basis for any necessary reports to city or state commissions or other authorities having jurisdiction over the condition of consumers' meters.

The foregoing analysis of the accounting work connected with maintaining meters entirely ignores all other routine work in connection with the meters, including test methods and equipment, the investigation of the proper types of meters and parts of meters, the standardization of instruments, the methods of handling the employees, their proper training, and the like.

**Number of Record Systems:** The question frequently arises as to the number of such systems that should be kept. In a small company one can imagine all the transactions being handled by the bookkeeper and the superintendent; but as the company grows and the work is subdivided into departments, the tendency will always exist for each department to be completely equipped with a set of records having particular or single reference to its own work.

Such exclusive records are expensive to maintain and are undoubtedly the cause of much duplication of labor. On the other hand, if a department were not completely equipped and emergencies should arise, delay would occur in obtaining the data necessary to meet the emergency. In large companies one record for recording all the facts desired by the company as a whole could not possibly answer the needs. The reference to such a record would be so frequent that the work would be held up while employees of the different departments were taking their turn to consult the record. The answer to the question, therefore, is that the number of departmental records should be governed by the circumstances,

and that a company starting with the minimum number will expand as the business grows.

## II. ACCOUNTING RECORDS

Up to this point the records described have been, in the main, of a statistical variety. In this division, however, are found the records containing the actual income transactions with customers, which must necessarily be of a permanent character and conform to recognized accounting principles.

**Accounting:** There are two systems of handling customers' accounts in general use. In one of these all the facts are embodied in the ledger, and in the other the facts are divided between a billing medium and a ledger. The system first referred to follows long established gas practice and the second is the outgrowth of conditions peculiar to the electric lighting business.

Gas is usually sold at a flat rate per thousand cubic feet meter measurement; hence gas accounts are comparatively simple. One account can be kept for each meter set, and although a customer may have several meters it is usual to render a separate bill for each one. The entry in the gas ledger need show simply the date and the state of the meter, the indicated consumption and the extension thereof at the given rate. Cash payments may be indicated by a posting symbol. "Cut-ins" and "Cut-outs" may be executed on orders issued by the ledger clerk and there is very little record kept of conditions beyond the meter. The gas ledger is a bound volume designed to last for several years. The accounts are entered therein in geographical order and usually maintain that order, for the gas business has more nearly reached the saturation point than has the electrical business.

Electric current is sold at differential rates. A customer may have more than one form of contract on the same premises and several meters may be furnished him under each contract, the charge being based on the sum of the meter readings so furnished. The data entering into the calculation are varied in character, especially if a maximum demand charge is involved or if the rate is based upon a guaranteed amount of consumption. There are many variations of all these factors in use, the result being that electric light calculations are complex in their nature and require considerable room for the spreading out of the details making up the charges. The business is continually increasing and it is not an unusual occurrence for whole blocks of buildings to be connected to the mains at one time. Therefore, if it is desired to enter the accounts in geographical order, some kind of flexible binder must be provided to permit new accounts being inserted in their proper place.

Under these conditions it is not surprising that many electric lighting companies have deemed the simple direct form of the gas ledger not well adapted to their needs and have devised in its stead a billing medium in which the details of the individual charges may be spread out and the amounts then posted to the debit of the customer in a separate record. Such a billing medium usually consists of loose sheets with the name and address of the customer printed by means of the addressograph on the left-hand side of the sheet, the names appearing on succeeding lines in geographical order. In vertical columns across the sheet appear details of the meter readings and the consumption rate, and extension and additional columns are frequently provided for distribution purposes. Such sheets, if securely bound in permanent bindings numbered and indexed, constitute a record

which adequately fulfills all requirements as to continuity and permanency demanded by good accounting practice. Records thus bound by a company are no less valid than a book bound, paged and numbered by a stationer.

Where the separate billing medium is employed the ledger becomes of secondary importance. It may be of the loose-leaf, self-balancing type or it may consist of cards, one for each customer. In the latter event trial balances must be taken off at the end of monthly intervals. Such ledgers are simply collection devices and are frequently kept by the collection officials.

While recognizing the validity of separate billing and ledger records and also conceding their many advantages, the author in his practice uses the gas ledger form in the belief that its simplicity, concentration of responsibility and permanence offset some of its disadvantages, many of which can be overcome with little difficulty. Whatever the system used, however, the important point is that the details of operating revenue should be contained in a definite, comprehensive record capable of audit and analysis at any future time.

A good system is one which will provide an adequate record at a minimum cost. The time of high-priced clerks should be confined to handling the more important part of the work and junior clerks should as far as possible handle the tributary details. In comparing costs it should be borne in mind that immediate pay-roll expenditures are not final exhibits. Clerks require supervision, office space, heat, light, ventilation, and toilet accommodations, as well as vacations and sick leave. Provision must also be made for various modern welfare systems, including service annuities and possibly profit sharing. Hence, in making up statements of costs for one prospective accounting system as compared to another, the



direct pay-roll expenditures should be increased by one-third to one-half to cover such overhead or attendant expenses. Whether an existing accounting system is adequate or not should be determined by the extent to which it facilitates the work of other departments as well as by reference to its own internal workings. The economy of operation may be determined by reducing the total expense to terms of cost per meter connected. When this figure is used as a basis for the comparison of systems, the total expense should include all items of expenditure occurring between the reading of the meter and the final deposit of cash receipts in the bank.

## CHAPTER IV

### ACCOUNTING FOR SUPPLIES

Supplies, as has been stated before, require the investment of cash in advance of their immediate need; but the conditions of the electric light business are such that these needs must be anticipated or the business would come to a stop. The word "supplies" includes a wide range of materials which may often be used for the different subdivisions of the plant investment account and of the operating expense accounts or may even be sold. This uncertainty as to the ultimate destination of material necessitates its being carried on the books as an undistributed asset. In this respect, therefore, it shares some of the characteristics of a prepayment.

Supplies as a rule are easily portable, have a ready sale value (although possibly at a large discount), and therefore must be safeguarded. As their use must be accurately accounted for, they should be issued only on requisitions made by responsible authorities and on standardized forms. Because of these conditions the care and the handling of supplies have become functions of sufficient importance to warrant the creation of a department, under the control of a storekeeper, to minister to the needs of the entire company. A storeroom centrally located under the control of an experienced official who is in touch with the different working departments is a valuable adjunct to the business. By its means the accumulation of excess quantities of materials

in the custody of departments is avoided. If the rule prevails that material shall be delivered to departments only on written orders and a separate order must be given for each job, a most effective means has been provided by which all departmental operations may be subjected to scrutiny and control. A further step in this direction is provided if the care and delivery of supplies is separated from the purely accounting functions involved. To this end the storeroom records should deal only with quantities and the accounting department records only with values, both departments of course having the same underlying data.

The materials for the storeroom should be purchased on the storekeeper's requisitions, he being guided in this respect by the advice of the working authorities. Once purchased, the materials should be placed in bins and a card should be kept for each kind of material. This card should be ruled so as to show "quantity in" on the left side and "quantity out" on the right. When material is received the card should be debited with the quantity, the entry showing the source from which it is received; and when material is delivered the quantity should be credited, the requisition number being recorded. The difference between the two sides should of course agree with the quantity in the bin, a fact which should be verified at frequent intervals. If the company is a large one running several storerooms, totalizing records should be kept at headquarters. These records are practically duplicates of the bin cards in the individual storerooms, being written up from the same data.

This simple record system is applicable to the bulk of material carried, but where the stock consists of cable and incandescent lamps more specific records may be

necessary. For instance, cable because of its value and fluctuating price is better cared for by keeping track of the stock by individual reel numbers. The absence of values in the supply-room records, however, simplifies the problem and shifts to the accounting department the difficulties involved.

The accounting department deals with the subject of supplies from the money standpoint. A price card should be kept for each kind of material carried in stock and the prices should be corrected each time the price of an article changes. The storeroom should send daily to the accounting department the orders which have been filled. It is essential that the orders should be numbered serially and each number in the series accounted for. The accounting department finds the value of each order by extending the articles at the last quotation and footing the items. The sum of all the orders is credited to the controlling account in the general ledger and contemporaneously charged to the work order or operating account interested.

At stated intervals the storeroom sends to the accounting department an inventory of supplies on hand. This inventory when priced and extended should agree with the balance as shown by the ledger. Inventories are usually taken at the end of the fiscal year, when the peak load of the accounting department occurs. Inventory adjustments, however, involve a great deal of research and examination of the records of past transactions, and the end of the year is a most inopportune time for such work.

Such a difficulty may be avoided by dividing the stock into classifications and proving up each class separately and at different times so that by the end of the year the entire stock will have been reviewed. This makes the

inventory a matter of monthly routine and enables adjustments to be made easily and without undue stress.

With such a system in vogue the routine operations in the accounting department in connection with supplies would be somewhat as follows:

(1) Materials when purchased are charged to the supply account in the general ledger at the invoice cost. The items on the invoice should be endorsed with the class number to which they belong.

(2) Sub-accounts should be opened with each class of material and the invoice charges distributed accordingly.

(3) Items on the delivery order slips received from the storeroom should be endorsed with the class number. The items should then be priced, the amounts extended and the slip totaled.

(4) Slips should be listed by number and amount and the total credited to the supply account in the general ledger.

(5) Slips should be distributed by class numbers and the total amount of each class credited to the class number in the sub-account.

(6) The amounts of the slips should be distributed by accounts or work order numbers and the total of each distribution charged to the account or the work order interested.

(7) It should be established that the totals arrived at by processes (3), (4), (5) and (6) are in exact agreement.

The storeroom when forwarding an inventory to the accounting department should report the value of material in stock for which no invoice has been received or approved. For this purpose the storekeeper's requisitions on the purchasing department for materials may be used as the basis. These requisitions should be endorsed with the quantity of materials when they are received and also with the amount of the invoice as

approved for payment, when that arrives. At inventory time the storekeeper should go over these requisitions and list the items showing material received for which no invoice had been passed. The amounts as shown on his list would then be deducted by the accounting department from the value of the inventory as determined.

## CHAPTER V

### RENEWAL AND CONTINGENCY RESERVE

This chapter, although given perhaps an unfamiliar title, is devoted to the consideration of the so-called "depreciation" problem as it exists in the electric lighting industry, and also of those unusual happenings most conveniently expressed by the word "contingency."

Depreciation is sometimes defined as the fall in the exchangeable value of wasting assets. This is a limited definition, however, and the word thus used very imperfectly expresses the conditions in connection with which it is employed. In reality depreciation is not concerned primarily with the fall in the exchangeable value of an asset; it deals with the specific provisions that must be made to replace tangible property when retired from service, whether the retirement is caused by wear and tear, obsolescence or inadequacy.

The cost of replacement of property withdrawn from service should not be capitalized. Capital was used for the first installation and is being recompensed, presumably, through the revenue account. The only remaining source of funds for replacement transactions is the business itself, either by the creation of a corporate reserve or an operating reserve, as previously defined herein. An authority on this phase of the subject has recently declared that "all capital outlay on wasting assets consists merely of payments made in advance on revenue account." In this view, the cost of replacement is as

much an item of operating expenses as coal consumed, wages paid or repairs, the only point of difference being that the latter must be paid for at once. The essential requirement is that a reserve should be set up to renew the property when it is retired from service, and furthermore, that the cost thereof should be spread over the years during which the useful life of the property expires.

The theory underlying rate-making in public service corporations is not, as is the case in industrial concerns, that the rates should be based upon the value of the service rendered or should be all that the traffic will bear, but that the rates should be based upon the cost of the service, plus a reasonable rate of return upon the value of the property devoted to the purpose. The cost of operation during any period should therefore be completely determined; and this necessary completeness can only be secured if, in addition to the expenditures for current costs, such as labor, supplies, taxes, bad debts, etc., there should be added an estimate of the cost of the property used up during the period. Contemporary consumers should not be required to pay more than their proportionate share of the cost of replacement; nor should posterity be unduly burdened with a disproportionate share because of the shortsightedness or poor judgment of their predecessors.

The determination of the amount to be reserved for the replacement of property retired, and the method of arriving at this amount, can be made, with propriety, only by the corporation. Several reasons may be cited for this conclusion. The problem is a local one and the circumstances vary in each community. Only those intimately connected with the business, possessing a thorough knowledge of the characteristics of the plant and familiar with



the habits and necessities of the population served, are qualified to determine the questions involved. The principal reason for the conclusion, however, is that the corporation is bound by the result. If an inadequate amount is reserved for the cost of replacement, the loss must fall upon it. Lack of foresight in the past cannot be remedied by unequal and inordinate charges in the future; hence any deficiencies existing when replacements become necessary must be made good by the sacrifice of present or future profits. Management and control is an inseparable accompaniment of financial responsibility and it is impossible to conceive of a permanently successful enterprise where one is divorced from the other.

The reserve for the replacement of property retired from service may be accumulated either by what may be called the "specific method" or by the "general method." A corporation adopting the "specific method" would, as a first step, prepare an itemized inventory of its property showing for each item the original cost at which it stood charged in the plant investment account, the estimated life in years and the estimated scrap recovery value. The original cost, less the scrap recovery value, divided by the years of life, equals the amount to be reserved annually. In the preparation of such an inventory, difficulty will probably arise in connection with the life table. If all the property were to continue in service during the entire period of its normal life, a very close approximation of the amount of the annual reserve could probably be determined. Results would vary by items, but the average on the whole would not be far out of the way. Property in the electric lighting industry, however, rarely lives its normal life. Retirement because of obsolescence or inadequacy is a dominating

factor in the problem. The time may arrive when machinery, apparatus, devices, etc., will be on a stable basis, and then the depreciation problem will be comparatively easy of solution. No one is prepared to say, however, when this time will arrive; and surely, improvement and change in every branch of the production and distribution processes were never so rife as at the present moment. Therefore, since the expectancy of life of apparatus used in the business is so materially affected by the hazards to life arising from wear and tear, obsolescence and inadequacy, the "specific method," involving primarily the use of life tables, is not adapted to the present situation in the electric lighting industry. The "specific method" is theoretically correct; but if by its adoption inadequate reserves should be accumulated, the perfection of the theory would be slight compensation for the loss entailed by its use.

Under the "general method" a reserve is created arbitrarily. The amount thereof may be determined by taking a stated percentage of the book value of the property or a percentage of the gross earnings from the sale of electric current, or by a rate per kilowatt hour of electric current generated or sold. The plan adopted, however, should be one that contains easy computations; one that is flexible, permitting changes in the rate from time to time in the light of experience; and, furthermore, one that will apply equally to the entire product and occupy an appropriate position in the schedule of operating expenses. The disadvantages connected with the first two methods are that a percentage applied to the book value of the property does not take cognizance of the element of work done, and a percentage applied to gross earnings does not bear equally on the product because of the rate schedules. For instance, if the

percentage were fixed at 10 per cent., electric current sold at 10 cents per kilowatt hour would contribute 1 cent per kilowatt hour to the reserve, whereas current sold at less than 10 cents per kilowatt hour would contribute a proportionately less amount, although the depreciation effect of both sales might be the same.

The third plan mentioned as possible under the general method, whereby the reserve is accumulated by means of a rate applied to the quantity of electric current generated or sold, comes more nearly than either of the others to fulfilling the stated requirements; and wherever it has been used, the results have generally been satisfactory. Under this plan—especially if the corporation is selling electric current in bulk, delivered at the switchboard of its generating plant—two rates may be necessary; a lower rate for the bulk supply; and a higher rate for current sold to general consumers, which circulates through the entire system, including the generating, the transmission and the distributing equipment.

Under whichever method used for setting up the reserve, however, the reserve itself should be held for the replacement of the property as a whole. If a contrary course is followed and reserves are accumulated separately for the production plant, the transmission plant, the distribution plant and the miscellaneous plant, a number of reserves will be established, which may in total be adequate for the company's purpose, yet which may individually be insufficient or excessive. Under such a condition transfers from one reserve to another would throw the entire system out of gear. The arguments for individual reserves are that the cost of production at the company's switchboard should include depreciation as an item of cost, as should also the transmission and the distribution expense totals. The amounts of reserves,

however, are the result of approximations, and the advantages of being able to show total costs at each of the main divisions of the operating expense schedule are overshadowed by the disadvantages and complications resulting from limiting the uses of the individual reserves.

A company, once having accumulated a reserve for renewals, need not write off at annual intervals a proportionate amount of the cost of its tangible assets; the assets would better be carried in the property accounts at their original cost until finally retired from service. This plan simplifies the accounting problem involved and enables an exhibit to be made showing the unexpended balance remaining in the reserve; it also identifies the cost of the actual apparatus retired and charged to the reserve.

When property is retired it should be credited to the proper subdivision of the plant investment account at the amount at which it was originally charged thereto, and the reserve should be contemporaneously charged. It is recommended that this process be carried on through the medium of the work order system, thus ensuring that full and accurate details accompany each transaction. If this procedure is followed, the cost of replacement may properly be charged to the plant investment account, any difference between the cost of property retired and the cost of replacement being thus automatically adjusted. The scrap recovery value is usually the result of a separate transaction and should be credited to the reserve by an appropriate entry.

Differences between the cost of property retired and the amount available in the reserve should be adjusted through the profit and loss account. Such differences may occur because the corporation has reserved an

insufficient amount by reason of a low estimate of the cost, because no reserve at all has been provided, or because it has been provided at a too recent date. This last point of a too recent provision for the reserve is of importance in connection with retirements of which a certain portion of the cost expired in previous years. For instance, a corporation had a reserve fund that at January, 1912, represented three years' accruals. On the same date a boiler, installed five years prior to the time the reserve was first established, was retired from service and replaced by one of an improved and more economical type. The old boiler had been in service eight years, and the adjustment as between the profit and loss account and the reserve was determined as five-eighths and three-eighths of the original cost, respectively. This determination was questioned, however, for the following reason. The boiler when installed was of an efficient type, adequate for the conditions then prevailing, and it had a reasonable expectancy of a normal life of twenty-five years. It was replaced not because of its being no longer fit for service, but because of the greater benefits which would accrue to future consumers by the substitution of the improved type. As the change was made entirely for the benefit of posterity, it was reasoned that posterity should assume the proportion of the original cost based upon the normal life. The adjustment, therefore, finally determined as between the profit and loss account and the reserve was five years and twenty years, or 20 per cent. and 80 per cent., respectively. The foregoing is not a fanciful illustration but represents an occurrence in actual practice.

In addition to the amount reserved to provide renewals of property retired from service as a result of

natural causes, an operating reserve should be created for contingencies. The amount required for this purpose is necessarily approximate, for not only is the cost uncertain, but the very occurrence itself is conjectural. It needs but a glance at the history of different communities to cause a realization that property is subject to divers perils, the cost of which the business must carry. The simplest plan is to create one reserve available for all purposes; but even if separate reserves are set up, the amounts thereof should not be kept inviolate for a single purpose but should be available for any use for which the business is itself responsible according to the exigencies of the moment.

The question frequently arises as to what disposition should be made of the amount of money or money's value behind the reserve, pending the time when its use is demanded for renewal operations. One of the pronounced characteristics of present-day business requirements is the amount of new money necessary for extensions. No better investment for the fund back of the reserve can possibly be found than is afforded by revenue producing property under the direct control and management of the corporation. This phase of the matter is fully discussed in a recent publication, and the conclusions reached by the writer are so admirably presented and are so pertinent to the conditions as they exist in the electric lighting industry at the present moment, that the author takes the liberty of including a liberal quotation therefrom:<sup>1</sup>

"These contributions need not remain lodged in the bank until the money is required to renew the wasting assets. The swelling balance at the bank should in the meantime be

<sup>1</sup>"Depreciation and Wasting Assets," by P. D. Leake.

used, as it generally is used if required for the ordinary purposes of the business.

"It increases for the time being the available floating or circulating-capital; and, as the moneys representing the contributions are retained out of revenue receipts, the requirements of the business may simultaneously increase to an extent demanding the permanent use of these moneys as additional floating capital. Again, if not used to answer a growing need for further floating capital, the contributions may be gradually absorbed by the purchase of additional wasting assets, such as further plant, permanently required by the undertaking.

"In either of these cases, when it becomes necessary to renew the original wasting assets, and bring them up to their value again, the money, although specifically contributed by revenue year by year in the past, will not be found at the bank available for use. The reason is that it has been already invested to answer the growing need of the business for new capital; and, therefore, directly the money is required for its originally intended purpose, it is legitimate and necessary to permanently increase the capital of the undertaking by issuing new capital, and to use the money provided by this increase of capital to renew the original wasting assets, because the undertaking now needs a permanently larger capital, fixed or floating, or both. In the meantime, sums in lieu of this new capital have been borrowed year by year, as above stated, out of the proceeds of the gradual return of the money laid out in the wasting assets which formed part of the original "fixed" capital investment.

"The use of the new capital for the renewal of the original wasting assets will operate to pay back the temporary loan borrowed from the original "fixed" capital which was properly made at a time when the money would have been otherwise unemployed in the business. Thus the operation of exchanging into other forms of value, and so gradually using up and reducing, what are called "fixed" assets (although really wasting assets) in the ordinary course of carrying on the business of a profit-seeking undertaking is not reducing the capital of the

business, for the capital (or exchangeable value) will be found residing in some other asset received in exchange, which may be in the form of sale stock, debts, cash, plant or other value, provided always that the revenue account has been in the meantime charged with adequate sums for expired capital outlay."

The definitions of the operating "renewal and contingency reserve" and of the operating "contingent expense" account, as given in earlier parts of this book, embody all the points contained in this discussion; and it is believed that if the principles and methods advocated therein are adopted, a long step will be taken toward the solution of the depreciation problem with which all are confronted.



## CHAPTER VI

### THE INCOME STATEMENT AND WHAT IT SHOULD CONTAIN

The income statement is a summary of the earnings of the company during a stated period. It is intended primarily for the enlightenment of the stockholder or the layman rather than for those concerned in the active management. Hence it should be prepared in such a manner as will enable one to ascertain at a glance the amount and character of the earnings, as well as to obtain some idea of the efficiency with which the affairs of the corporation have been conducted. All this can be accomplished despite the condensation necessary, provided the significance attached to the different parts of the statement be understood, and provided there be furnished a few fundamental statistics.

The items in an income statement should appear in the order given below, the elements of each being contained in the discussion which follows:

- Operating Revenues
- Operating Expenses
- Net Earnings from Operation
- Non-operating Revenues
- Non-operating Expenses
- Income for Period
- Statistics

**Operating Revenues:** These consist of amounts received from the sale of electric current, from profit on merchandise sales or contract work and from miscel-

laneous sources such as rent of meters and other equipment. Electric current is supplied to the general public and to the municipality under the terms of the franchise and in accordance with the obligations imposed upon the company as a common carrier. The business is classified and the rates for each class vary according to a published schedule, the average rate for all the product being determined by conditions existing on the customers' premises and hence not within the control of the company. It is not apparent that any particular advantage would be derived by those outside of the management from a knowledge of the details of the sales of the company. The amount sold to the general public, therefore, should be summarized in one item, with the unit figure representing the revenue per kilowatt hour sold being added. Fluctuations in this unit rate will impart all the information necessary in regard to the progress of the company's affairs. If it is the policy of the company to seek an additional outlet for its product by means of sales to other public service corporations, the amount of such sales and the corresponding unit rate per kilowatt hour should be shown as a separate item on the statement, because that particular kind of business is optional with the company. The amount thereof and the unit price are entirely within its control, and the character of the supply and the conditions of use differ materially from the similar factors applying in the case of electric current distributed to the general consumers.

**Operating Expenses:** These should be shown in three items, viz.: "sundry items," "contingent expense" and "taxes," the unit cost per kilowatt hour sold per item and per total also being shown. All these items have the same significance in that they constitute a part of the cost of manufacture and sale of the product, but the second

and third items are matters of too great interest to be hidden in a total. Contingent expense indicates the amount reserved to maintain the integrity of the book value of the plant investment, and no statement would seem to be adequate which did not show the provision being made for this inevitable although deferred outlay. Similarly, the amount contributed by the business toward the cost of government is of great interest; and the fluctuations in this amount, over which the management has no control whatever, will frequently be explanatory of variations in the total cost which might otherwise cause conjecture.

**Net Earnings from Operation:** These represent the amount remaining after the operating expenses are deducted from the operating revenues. This amount is comparable to the value of the property devoted to the business purposes of the company as shown by the balance sheet. If the net earnings are to have any value as a basis of comparison with the investment of the company, however, it is necessary that every item of cost incident to the conduct of the business be accorded an appropriate position in the schedule of operating expenses, and that no items be excluded therefrom because of finely drawn distinctions as to what the term "operating expenses" really embraces. In other words, under the classification of "operating expenses" should be included every outgo which is properly recoverable in the rates at which the product is sold.

**Non-operating Revenues:** These include the income from property owned by the company but not used in its business, the property being carried on the balance sheet as investments. Interest received on bank balances and other income interest items are also included under this caption.

**Non-operating Expenses:** These include costs incident to the collection of revenues from investments, which include stocks, bonds, real estate, etc. There is also included interest on customers' guarantee deposits and other interest items which are incidental to the conduct of the business and do not represent payments for money specifically invested therein.

**Statistics:** The necessarily condensed character of the income statement precludes the use of more than a few statistics having a direct relation to the financial conditions.

The operating revenues, for instance, should be supplemented by some data relating to the physical side, such as "connected load," "number of customers" or "number of meters set." Of these three the most satisfactory from all points of view is the figure for the number of meters set, for this can be accurately ascertained. Moreover, the fluctuations in the number between one period and another will, when compared with similar fluctuations in the revenues, convey some idea of existing conditions either in regard to the rates or in regard to the disposition of the customers to use electric current freely or otherwise.

The rated capacity of the generating plant and the maximum demand occurring during the period, both expressed in terms of kilowatts, should also be given. The relation between the two is an indication of the additional earning possibilities of the present investment, provided the rated capacity be in excess of the maximum demand. Should there be no difference between the two, the indications might be—other things being equal—that the present investment as related to the earnings had reached the saturation point. A word of caution in regard to the conclusion to be derived from a study of

these figures is necessary, however; the results should not be construed too literally. Nevertheless, it may be said that they at least lay a basis for further inquiries.

The number of kilowatt hours sold per kilowatt of maximum demand is instructive. The effort of alert management is actively directed toward increasing this figure; and success in this respect indicates that business conditions are reasonably good, that the devices used in connection with the supply of electric current are becoming more numerous and that their character, both as to time and length of use, is diversified.

The form of income statement which accompanies this chapter has been prepared in accordance with the points contained in this discussion. Attention is particularly drawn to the fact that the statement is in the comparative form, a characteristic which should prevail whenever an assemblage of figures and facts is undertaken. To repeat what has hitherto been said, figures mean nothing by themselves; it is only in their comparative relation that their true significance is realized.

## COMPARATIVE INCOME ACCOUNT

Item	This year		Last year		Change	
	Am't.	Per K. W. hr. sold	Am't.	Per K.W. hr. sold	Am't.	Per cent.
<i>Operating revenues:</i>						
<i>Gross earnings from sale of electric current: ‡</i>						
General consumers and municipality.	00000	000	00000	000	00000	00
Other public service corporations.	00000	000	00000	000	00000	00
Total gross earnings, sale of elect. current.	00000	000	00000	000	00000	00
Profit on merchandise sales.....	00000	.....	00000	.....	00000	00
Miscellaneous sources.....	00000	.....	00000	.....	00000	.....
Total operating revenues.....	00000	000	00000	000	00000	00
<i>Operating expenses:</i>						
Sundries.....	00000	000	00000	000	00000	00
Contingent expense.....	00000	000	00000	000	00000	00
Taxes.....	00000	000	00000	000	00000	00
Total operating expenses.....	00000	000	00000	000	00000	00
Net earnings from operation..	00000	000	00000	000	00000	00
<i>Non-operating revenues:</i>						
Interest on bonds.....	00000	.....	00000	.....	00000	.....
Dividends on stock.....	00000	.....	00000	.....	00000	.....
Interest on notes.....	00000	.....	00000	.....	00000	.....
Interest on bank balances.....	00000	.....	00000	.....	00000	.....
Miscellaneous sources.....	00000	.....	00000	.....	00000	.....
Total non-operating revenues	00000	.....	00000	.....	00000	.....
<i>Non-operating expenses.....</i>	00000	.....	00000	.....	00000	.....
Net non-operating revenues.....	00000	.....	00000	.....	00000	.....
Income for the period credited to profit and loss.	00000	.....	00000	.....	00000	.....
<i>Statistics:</i>						
Number of meters set.....	00000	.....	00000	.....	00000	00
Rated capacity, generating plant	00000	.....	00000	.....	00000	00
Maximum demand, generating plant.	00000	.....	00000	.....	00000	00
Kilowatt hrs. sold per kilowatt of maximum demand.	00000	.....	00000	.....	00000	00

## CHAPTER VII

### ANALYSIS OF A BALANCE SHEET

The balance sheet is a photographic summary of the balances appearing in the accounts contained in the general ledger. Those balances which represent capital, funded debt and other liabilities are listed on the credit side of the sheet, while those which represent assets acquired by the investment of the company's funds appear on the debit side. By the means of this statement there is shown in concise form the exact financial status of the enterprise as of a given moment. To the initiated such a statement is capable of quick and accurate interpretation.

The balance sheet which follows has been prepared in order to show how this interpretation may be accomplished, the figures listed being entirely arbitrary.

One of the first points to be determined from a balance sheet is the status of the cash account and the resources that may be converted easily into cash, as well as the status of the immediate liabilities for the ensuing month. These items of immediate portent are listed on the balance sheet as current assets and current and accrued liabilities, and each sub-heading under these captions should be examined in order to ascertain its bearing on the immediate cash condition of the company. The method of analysis is somewhat as follows:

## COMPARATIVE BALANCE SHEET

Assets				Liabilities					
Item	Balance at close of period	Balance at beginning of period	In-creases or ap-propriations	De-creases or re-sources	Item	Balance at close of period	Balance at beginning of period	In-creases or re-sources	De-creases or ap-propriations
Plant investment.	10,542,100	10,226,400	315,700	.....	<i>Funded debt:</i>	3,300,000	3,300,000	.....	.....
Plant investment, work in progress.	113,700	103,900	9,800	.....	First mtg.	.....	.....	.....	.....
<i>Current assets:</i>					Debenture bonds.....	.....	.....	.....	.....
Cash.....	240,900	239,100	1,800	.....	Real estate mortgages.....	57,000	54,000	3,000	.....
Bills receivable.....	3,800	4,000	.....	200	<i>Current liabilities:</i>	1,300,000	1,180,000	120,000	.....
Accounts receivable.	293,100	271,700	21,400	.....	Bills payable—demand.....	140,600	129,300	11,300	.....
Interest and dividends receivable.	11,800	10,800	1,000	.....	Coupon interest matured.....	82,500	81,775	725	.....
<i>Business assets:</i>					Dividends declared.....	64,500	63,000	1,500	.....
Material and supplies.	267,300	246,700	20,600	.....	Customers' deposits.....	38,000	35,000	3,000	.....
Prepayments.....	900	950	.....	50	Service extension.....	400	450	.....	50
<i>Nominal assets:</i>					<i>Accrued liabilities:</i>	.....	.....	.....	.....
Special deposits, coupon interest.	82,500	81,775	725	.....	Unmatured coupon interest.....	712	675	37	.....
<i>Investments:</i>					Unmatured real est. mtg. int.....	26,000	23,600	2,400	.....
Bound.....	138,000	138,000	.....	.....	Unmatured loan interest.....	25,000	20,000	5,000	.....
Free.....	1,036,700	952,100	84,600	.....	Taxes accrued.....	9,700	9,700	.....	.....
<i>Treasury securities:</i>					Rents accrued.....	2,700	2,500	200	.....
Bonds.....	None	29,000	.....	29,000	Misc. exp. accrued.....	1,300	1,350	.....	50
Stock.....	.....	.....	.....	.....	<i>Reserves:</i>	.....	.....	.....	.....
General.....	5,000	6,500	.....	1,500	<i>Corporations:</i>	.....	.....	.....	.....
Casualties.....	.....	.....	.....	.....	Premium on stock.....	17,400	15,900	1,500	.....
Supplies expense.....	.....	.....	.....	.....	Premium on debt.....	.....	.....	.....	.....
Acc'ts. receivable.	16,900	14,100	2,800	.....	<i>Operating:</i>	1,165,700	1,065,800	99,900	.....
Misc. billing.....	.....	.....	.....	.....	Renewal and contingency.....	68,000	63,300	4,700	.....
Debt., dis. and exp.	.....	.....	.....	.....	Service annuities.....	.....	.....	.....	.....
					<i>Capital stock:</i>	.....	.....	.....	.....
					Debenture.....	.....	.....	.....	.....
					Preferred.....	4,300,000	4,200,000	100,000	.....
					Common.....	2,153,188	2,078,675	74,513	.....
					Profit and loss.....	.....	.....	.....	.....
Totals.....	12,752,700	12,325,025	458,425	30,750	Totals.....	12,752,700	12,325,025	427,775	100



**CURRENT ASSETS**

**Cash:** This item should of course be taken at its book value.

**Notes and Bills Receivable:** The maturity of the individual notes and bills must be ascertained, only those maturing within the month being included as present cash resources.

**Accounts Receivable:** It is reasonable to expect that receipts during the month will approximate in amount the outstandings at the beginning of the month; hence this item may be included among the cash resources at its book value. If some unusual condition prevails, however, such as sometimes happens in connection with governmental accounts, the book value should be qualified accordingly.

**Interest and Dividends Receivable:** This requires examination; only such amounts can be included among the cash resources as are receivable during the month.

**Business Assets:** These have no cash value and must be excluded.

**Nominal Assets:** These represent cash set aside for a specific purpose and are not available for current uses.

Of the foregoing items surely available for current uses, only the following may be safely considered:

Cash.....	\$240,900
Accounts Receivable.....	293,100
	<hr/>
Total.....	\$534,000

**CURRENT AND ACCRUED LIABILITIES**

**Notes and Bills Payable—Demand:** These, although in form an immediate liability, are generally indicative of a friendly source of funds that will not exercise the demand right. The liability may even be liquidated by the issuance of a permanent security; hence they may be omitted from the list of obligations requiring immediate settlement.

**Accounts Payable:** An accepted obligation and payable at once.

**Coupon Interest Matured:** This has been provided for by the payment of cash in a corresponding amount listed as a special deposit.

**Dividends Declared:** An immediate liability payable in cash.

**Customers' Deposit:** This is not an immediate liability except to the extent of the monthly withdrawals. If the latter can be ascertained the amount thereof should be included for immediate payment.

**Service Extension:** This is the same in character as customers' deposits.

**Accrued Liabilities:** The extent to which these items are immediate liabilities must be ascertained. The items of accrued rent, wages and miscellaneous expenses should be listed as immediate in any event.

Of all the foregoing items, therefore, what might be called the cash liabilities are as follows:

Accounts Payable.....	\$140,600
Dividends Declared.....	64,500
Rents Accrued.....	9,700
Wages Accrued.....	2,700
Misc. Expenses Accrued.....	1,300
<hr/>	
Total Cash Liabilities.....	\$218,800

It thus appears that the cash resources are nearly  $2\frac{1}{2}$  times the cash liabilities—a very satisfactory condition requiring no “financing.”

If there happened to be no such surplus of cash resources, however, the matter would be one calling for further examination. Bankers are likely to look with suspicion on balance sheets of commercial lines which do not disclose at least \$2 of liquid assets for every dollar

of current liabilities; but an electric light company should not always be an object of such suspicion. A pronounced characteristic of the business is the preponderating extent to which the assets consist of permanent investments representing an equivalent amount of cash retired from current circulation. Hence, before condemning the company because the cash resources might be insufficient in amount to meet the current liabilities, an investigation should be made to determine whether the conditions were not such as to warrant the issue of additional securities from the sale of which the temporarily depleted cash resources might be restored. It is expected that securities will be represented by fixed assets of some character, and reserves and surplus by liquid assets. Should it appear that the fixed assets exceed the amount of the outstanding securities a basis for the issue of additional securities is at once apparent.

On a further analysis of the balance sheet in question, therefore, the following conditions are disclosed:

### ASSETS

#### Permanent:

Plant Investment.....	\$10,542,100	
Work in Progress.....	113,700	
Investments—Bound.....	138,000	
Free.....	1,036,700	\$11,830,500

#### Liquid:

Excess Current Assets over Current and Accrued Liabilities.....	\$508,888	
Casualties Suspense.....	5,000	
Miscellaneous Billing Suspense....	16,900	530,788
	<hr/>	<hr/>
Total Book Value of Assets.....		\$12,361,288

## LIABILITIES

**Permanent:**

First Mortgage Bonds.....	\$3,300,000	
Real Estate Mortgages.....	57,000	
Demand Notes.....	1,300,000	
Capital Stock.....	4,300,000	
Premium on Debt.....	17,400	8,974,400

## Amount of Assets Represented by

Investment of Surplus and Reserves	\$3,386,888
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**Reserves and Surplus:**

Reserve for Renewals and Contingencies.....	\$1,165,700
Reserve for Service Annuities.....	68,000
Profit and Loss.....	2,153,188

Total.....	\$3,386,888
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The assets representing the reserves and surplus may therefore be summarized as:

## Excess Amount of Fixed Assets over Permanent

Liabilities.....	\$2,856,000
Liquid Assets.....	530,788
	<hr/>
	\$3,386,788

The balance sheet represents a company evidently in easy if not affluent financial circumstances; yet it is apparent that some financing will be necessary when the time comes to use the reserves for the purposes for which they were created. In listing the assets, book values have been used and the balance sheet affords no proof of their integrity. The item most open to question in this respect is that of plant investment. As it appears, however, that a reserve of over 11 per cent. has been created for replacements and contingencies, no qualification of the book value of the item would seem to be necessary.

A balance sheet, being made up as of a certain date, shows only the conditions existing at that time. It cannot show the previous transactions. If the balance sheet be prepared in the comparative form, however, that is to say, if the corresponding balances at some prior date be listed in an adjoining column and the differences, plus or minus, be carried out on the margin, these differences when properly assembled will disclose the character and amount of the transactions which have occurred in the interim.

The differences should be assembled in a tabulation not as assets and liabilities but as appropriations or resources in terms of cash. An increase in an asset account represents an appropriation of cash, and a decrease represents a resource. Conversely, an increase in a liability account represents a resource; and a decrease, an appropriation. In the preparation of such a tabulation, it is usual to give a line to those items of an unusual or interesting nature and to summarize the others in one item.

With the differences as they appear on the specimen balance sheet the procedure would be as follows:

#### APPROPRIATIONS

Plant Investment.....	\$315,700
Work in Progress.....	9,800
Accounts Receivable.....	21,400
Interest and Dividends Receivable.....	1,000
Materials and Supplies.....	20,600
Special Deposits.....	725
Investments Free.....	84,600
Miscellaneous Billing Suspense.....	2,800
Service Extension.....	50
Miscellaneous Expense Accrued.....	50

## RESOURCES

Bills Receivable.....	\$200
Prepayments.....	50
Treasury Securities.....	29,000
Casualties Suspense.....	1,500
Real Estate Mortgages.....	3,000
Bills Payable Demand.....	120,000
Accounts Payable.....	11,300
Coupon Interest Matured.....	725
Dividends Declared.....	1,500
Customers' Deposits.....	3,000
Unmatured Real Estate	
Mortgage Interest.....	37
Unmatured Loan Interest.....	2,400
Taxes Accrued.....	5,000
Wages Accrued.....	200
Premium on Debt.....	1,500
Reserve, Renewals and Contingencies.....	99,900
Reserve Service Annuities.....	4,700
Capital Stock.....	100,000
Profit and Loss.....	74,513

These items may be conveniently summarized as below. The item of Cash, it will be observed, is given at the amount existing at both periods:

SUMMARY OF FINANCIAL TRANSACTIONS  
RESOURCES

Cash on Hand at Beginning of Period ....	\$239,100
Balance Carried to Credit of Profit and Loss	74,513
Capital Stock Issued.....	100,000
Treasury Securities Sold.....	29,000
Real Estate Mortgages.....	3,000
Bills Payable Demand.....	120,000
Reserve for Renewal and Contingencies...	99,900
Reserve for Service Annuities.....	4,700
	<hr/>
	\$670,213

## APPROPRIATIONS

Plant Investment.....	\$315,700
Work in Progress.....	9,800
Investments Free.....	84,600
Variation in Current Assets and Liabilities	19,213
	<hr/>
	\$429,313
	<hr/>
Cash on Hand at End of Period.....	\$240,900

By this means there is obtained a succinct statement of the eventful changes which have occurred in the financial structure during the period. Nothing is learned, of course, in regard to all the varied and interesting transactions leading up to the amount carried to the credit of profit and loss. It is evident that to present a complete account of the financial transactions of the business the balance sheet must be supplemented by an income statement covering the same period.





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